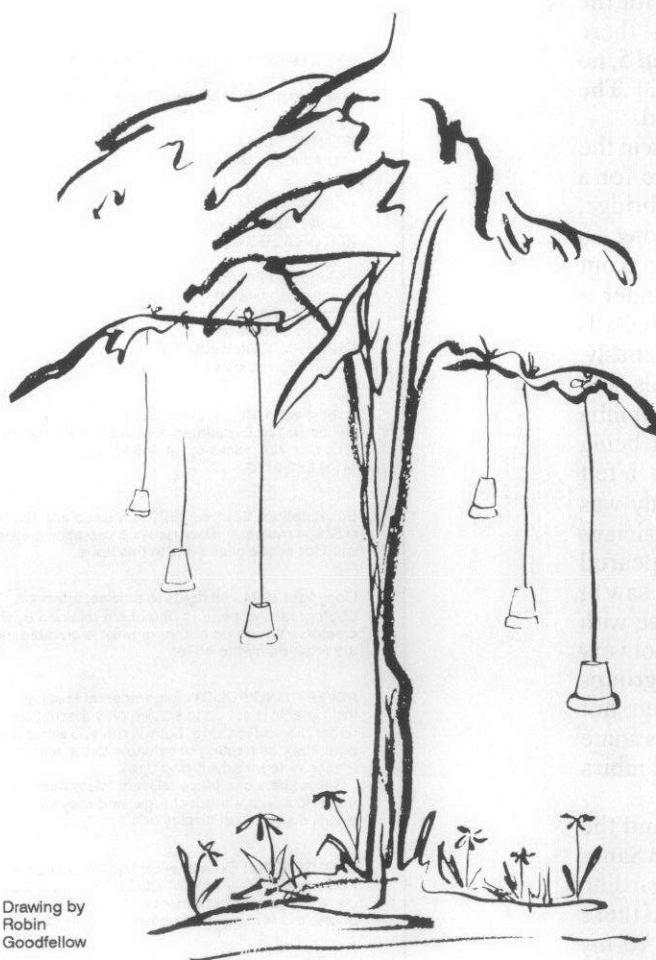


FOR THE DESIGN, CONSTRUCTION AND ENJOYMENT OF UNUSUAL SOUND SOURCES

EXPERIMENTAL MUSICAL INSTRUMENTS

IDIOCHORDS AND IDIOSYNCRASIES

Can an instrument and its strings be one and the same? *Idiochord* is an organologist's term for stringed musical instruments in which the strings are a part of the instrument body itself — strands of fiber lifted from the surface of the body, held under tension by small bridges forced underneath. For this to work, the instrument body must be of some highly fibrous material, like bamboo. In this issue of **Experimental Musical Instruments**, we have articles on two idiochords from the island of Jamaica,



Drawing by
Robin
Goodfellow

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with further notes providing background on related instruments the world over.

Also in this issue you will find reports on the exquisite sound sculptures of Mineko Watanabe Grimmer — a world of melting ice and falling pebbles — and Jim Doble's simple and beautiful mallet percussion instruments, along with some of his thoughts about making them. You will also find a history of the novelty instruments made by the firm of Mussehl & Westphal in the early and middle decades of this century. Flower pot bells and other simple hardware store instruments are the topic for an article by Barry Hall; Reed Ghazala recalls a violent rainstorm; and there are reproductions of important documents from the *Cloud Eight Archive of Musical Instruments and Fortean Musicology*. All this and more wait within. Open up, and read.

I DON'T HAVE ENOUGH INFORMATION for a full-length article about P.W.Schreck but you may want to include this in the "letters" section:

P.W.Schreck is a musician who was introduced to music when his uncle found the remains of a piano that was burned in a fire. His uncle pried the charred wooden frame off of the instrument with the intention of selling the remains as scrap metal. Young Schreck was fascinated by the ringing harmonics and bright swells of sound that he could produce with this "piano harp."

Years later, while working as a garbage man, P.W. Schreck found a wire recorder and several rolls of wire recordings (wire was used to hold magnetic recordings before reel-to reel and cassette tapes were developed). In the 1950's Schreck strung the recording wire on his "piano harp" and dragged the recorder playback head across the wires while he agitated the instrument. The result was a surprise of feedback, rumbling, harmonics, and the distorted sounds recorded on the wire.

Originally, Schreck used the material that was already on the wire recordings (hours and hours of anti-communist ranting). Later, he recorded his own "piano harp" playing onto the recording wire and strung it onto the piano frame.

I am currently looking for copies of P.W. Schreck's recordings. If anyone has access to this man's recordings, please contact me.

Mike Hovancsek
1889 Algonquin
Kent, OH 44240

he could find me one of these marimbas ... It took us all day! Going back and forth from one side of Santa Domingo on foot to the other. One person kept referring us to another until about at the point of both of us giving up, one of our contacts who had us waiting for a couple of hours after saying he would return in a few minutes came running up escorting an old man who was carrying two of the suitcase-size marimbas slung over his shoulders. There was not much interest in answering questions about the instruments, but I did buy one for twenty dollars U.S. currency. There was something very mysterious about the whole exchange including the quest and people encountered along the way. It was as if we were trying to find and smuggle some type of contraband?!?!?!? I kept thinking the police were going to burst from out of hiding to arrest us.

I still have the marimba and use it regularly. Something clicked the first time I saw the marimbas being used in the street bands. I had not started making mbiras yet, but I am quite sure that the contact made in Santa Domingo was significant in getting started.

This coming December I will be going to Zimbabwe to spend about two months with mbira makers and musicians there. From this trip I hope to find what has been preventing me from finishing the article [planned for

I ENJOYED VERY MUCH the September '93 EMI ... and not only for the articles about giant lammellaphone ... but while on that subject — there is an excellent article about them in *African Music Society Journal* 5, no 4 (1975/6): 140-48, by Donald Thompson, "A New World Mbira: The Caribbean Marimba". There are some great photos included.

I think it was in 1982 when I encountered the new world mbira in the city of Santa Domingo in the Dominican Republic. I was there for a week as part of a Spanish class I had enrolled in at the Cambridge, Massachusetts YMCA. I was taking a pleasant stroll along a beachfront avenue on my first evening in Santa Domingo when from out of the shadows emerged a band of musicians who set down under a streetlight and began performing. They performed about three ballads for a small audience of mostly tourists that had gathered spontaneously. The instrumentation consisted of a small guitar, flute, guiro, vocals, and the new world mbira. I was totally fascinated. I had never seen a kalimba that large and had no idea I would see an instrument like that being played in a street band in Santa Domingo. For some reason I felt extremely excited and had many questions to ask, but not only was language somewhat of a barrier, but before I could ask, the musicians had disappeared back into the shadows as quickly as they had appeared after accepting change from the audience. Later on that night I saw at least two other street bands more or less follow the same routine with more or less the same instrumentation. Though my memory is not very clear on this, it seems that during the week I was there I also saw groups that included a concertina or accordion, sometimes a small drum, not always a guitar, usually some type of open-holed flute and always some type of guiro (and maybe maracas too), and there was always the mbira or, as I later heard it commonly referred to, a "marimba."

The next day I began asking people about the street bands and the large kalimba-like instrument. I went to music stores in downtown Santa Domingo. No one seemed to know what was talking about regarding the instrument or really wanted to talk about the street bands as if there might be something disreputable about them. I finally spoke to my favorite black market moneychanger/freelance tourguide and he told me

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unusual musical instruments. A query letter or
phone call is suggested before sending articles.

a someday issue of EMI] about the tuning of overtones on mbira reeds.

There is a new newsletter out that may be of interest to EMI readers: **Utandande** c/o Paul Novitski 1711 East Spruce Street Seattle, WA 98122-5728 [more information in the following "Notes From ..." section]. **Utandande** is being published to connect the mbira & marimba community ... Also, Paul Berliner's, *The Soul of Mbira* is back in print through the University of Chicago Press. Berliner is trying to get Nonesuch Records to re-issue the two albums, *The Soul of Mbira* and *Shona Mbira Music* on CD.

Richard Selman

HERE IN SOUTHWESTERN COLORADO — about a half hour north of Silverton, and fifteen minutes west of Animas Forks, is a wonderful system of alpine valleys at about 13,000 feet altitude, that includes "Placer Gulch" — a nice cut between Treasure & California mountains. The area was very active at the end of the 19th century, as a gold and silver mining and milling location — as was most of this part of the state. At any rate, one late August day this summer I was hiking in the area and a snow storm blew up quickly that caused me to slip into the mouth of a test hold/mining tunnel for shelter. I didn't have a flash light — but I still felt like taking a real look at the place (there are hundreds of these tunnels in the area) — so I started to walk on back and commenced to humming, typical for me when I'm nervous or pre-occupied. I was about 1/3 of the way in (maybe 40 feet out of a total 120 feet, maybe 7 feet diameter) when I noticed that the tunnel began to hum and resonate in sympathy to me. I immediately stopped and varied my pitch up and down until I had hit the frequency that got me the loudest moan from the tunnel which gently filled my head up with very pleasant sound. So, I went on down to the inner most end still humming — came out to about the other 1/3 spot — tuned my frequency for maximum volume of response again and it was wonderful — the sound from the tunnel made me feel really nice.

I continued on out to the original 1/3 spot and began to sing a duet with the tunnel. Mainly, I started with the low sound that kept the tunnel going (it takes some time to stop) and followed with arpeggiated fifths, octaves, major 10ths — sweet overtone places — but kept dipping back to my low drone note to keep the tunnel going. None of this was real loud — but it certainly filled my head up with heavenly music. I got to "Placer Gulch" a couple more times in September — tried some other test/holes — and they were also playable. So I think I might have myself a new hobby for next summer. It was a little like a soloist playing a duet with his black box computer delay program and a little like hooting on a big bass jug.

Do you suppose city people could play their storm drain sewer systems?

Don Loweree

A FEW COMMENTS and further information re items in the December issue.

The responses of Warren Burt and myself concerning newer forms of "non-touched instrument" [in the Letters section of EMI's December 1993 issue] were merely to the statement in Ivor Darreg and Bart Hopkin's article that the theremin "is the only musical instrument, before or since, with not a single moving part." Perhaps "only" (instead of "first") and "before or

since" crept in unnoticed? The teven Martin film that I mentioned, *Theremin: an Electronic Odyssey*, is now finished, and was shown on British television in November. Sadly the inventor died on the following day, November 3rd, at the age of 97.

Further to Ivor Darreg's letter, the musical instrument collection at the Gemeentemuseum in The Hague recently acquired both an RCA theremin and a Novachord. The latter is an interesting instrument, which began promisingly, but seems to have failed partly because of the interruption of World War II and partly because vacuum tubes (it contains 163 of them) were still not as reliable as the mechanisms of the Hammond organ.

I have sometimes used the recording [also mentioned, with a photograph, in EMI's Dec '93 letters section] of the brick xylophone from Austria (copied from a friend's LP) in the lecture I give on new instruments, to emphasize that such unusual instruments are used in every kind of music.

I wanted to mention the bamboo organ at Las Piñas (not Pinrs) [mentioned in a later article in the December issue] in one of my articles in *The New Grove Dictionary of Musical Instruments*, but I didn't have time to check it out. After publication I found an entry on its builder, Diego Cera, because it followed one I had written! Cera became an Augustinian (not Franciscan) friar with the name of Diego de la Virgen del Carmen, and built the organ from 1816 to 1824. Early in the 1970s it was carefully dismantled and shipped to Germany to be restored. After this two books were published about it (the authors of the first one were probably the restorers); I don't know the names of the publishers:

Hans Gerd Klais & Hans Steinhaus: *The Bamboo Organ in the Catholic Parish Church of St. Joseph at Las Piñas, Province of Rizal on the Island of Luzon, Philippines*. Delaware, 1977 (more than 200 illustrations).

H.F. Samson: *The Bamboo Organ of Las Piñas*. Las Piñas, 1977.

The second instrument that was featured in an early periodical, the Deagan Una-Fon, even received a short entry from me in the same *Grove* dictionary, primarily because it was included in a work by Percy Grainger, plus the fact that it was designed for use at open air venues including skating rinks, and functions like auctions and political rallies! Virtually my only source of information for this was a reprint of Deagan's brochure in Harvey M. Roehl's Player Piano Treasury (Vestal Press, Vestal, New York, 1961 rev. 1962, pages 239-40), which shows two models, with ranges of 2 3/4 and 4 octaves. Because of a poor quality photocopy, in two photos I misinterpreted part of the playing mechanism as vacuum tubes, assuming that it was a simple electronic organ (one oscillator circuit for each note), and thus (also guessing the date of the automobile shown in one photo) from the late 1920s/early 1930s. A careless mistake; I should have gone back to the library with a magnifying glass, and realized it was rather unlikely that Deagan diversified into electronic sound generation.

Readers who knew Joe Jones or his work will be sad to hear of his death earlier this year at the age of 58. He began making his quirky music machines in 1963 in the New York Fluxus group; in 1972 he moved to Europe, where he became better known. A major retrospective of his work was held in Berlin in 1990; its catalogue *Joe Jones: Music Machines from the Sixties Until Now* and the companion book *Joe Jones: My First Book of Computer Drawings* provide an excellent survey of his work.

Hugh Davies

NOTES FROM HERE AND THERE

BACK IN APRIL OF 1991, EMI reprinted an article from a 1938 issue of *Popular Science*, on the eccentric string instrument maker Arthur K. Ferris. At the time of EMI's reprint the question naturally arose, "Where are the Ferris instruments now?" Just recently we received a letter from Holly Windle of the Schubert Club in St. Paul, Minnesota. The Schubert Club is a music center that produces concert series, awards music scholarships, and produces musical publications and exhibitions. It also contains a Museum of Musical Instruments, featuring instruments gathered through a lifetime of collecting by Bill Kugler. Several of the Ferris instruments, it turns out, are part of the Kugler Collection and are now housed in the Schubert Club's museum. Ms. Windle writes --

The Kugler Collection includes thousands of instruments from around the world, and among them are about a dozen instruments made by Arthur K. Ferris. Apparently, Bill Kugler knew of Ferris and his interesting instruments, and corresponded with him. When Ferris died (a date I am trying to ascertain), Bill Kugler and his wife Eda drove out to New Jersey to purchase a number of the instruments which they loaded in and on their car for the long drive back to Minnesota. I have included two photographs of some of the Ferris instruments in our collection as well as a copy of a sheet that Ferris sent out about fifty years ago. We have parts of the huge bass instrument shown on the copied sheet — maybe someday we'll make the ribs and reassemble the thing.

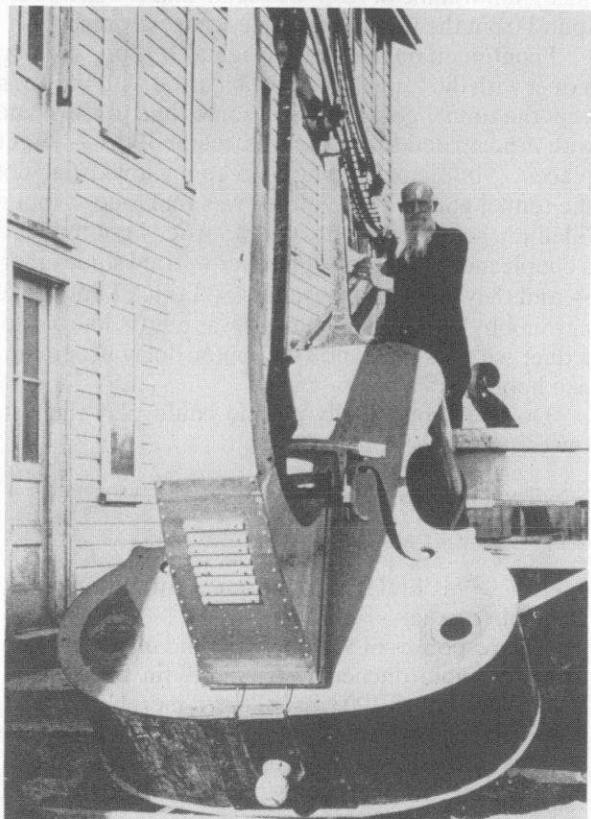
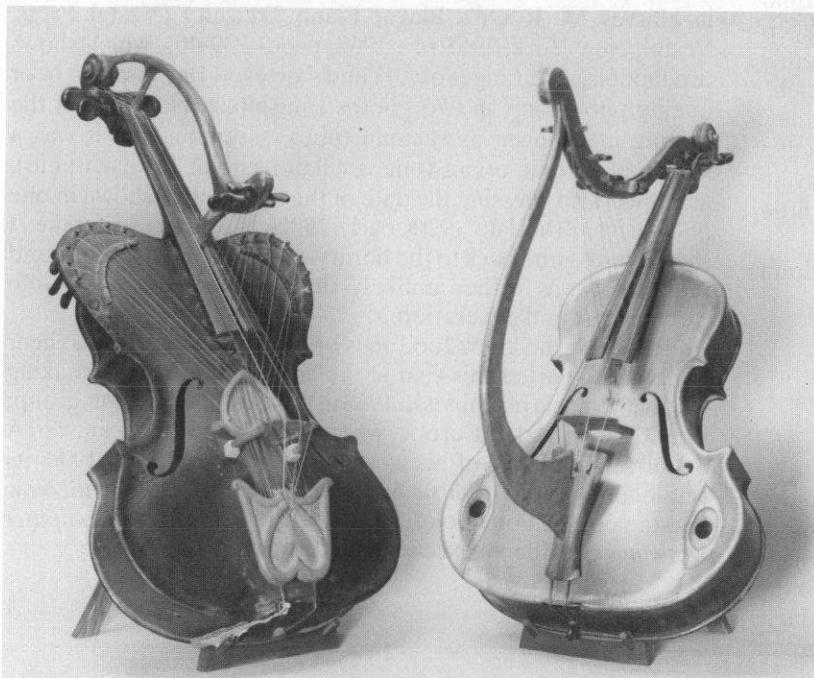
On most of the instruments, the insides are covered with densely written writings about God, angels, the finding of the

Photographs this page: INSTRUMENTS MADE BY KIRBY FERRIS in the thirties or early forties, now in the Kugler Collection of the Schubert Club Museum of Musical Instruments, St. Paul, Minnesota. The instrument on the left in the photo below is a courting instrument, requiring two people to play. The photo on the right is from a Christmas greeting sent by Ferris to the Kuglers in the 1940s.



wood for the instruments, and various theological points. Many of the instruments exhibit the "eyes of God" (as Bill Kugler called them).

We are currently beginning work on an exhibit entitled "Music, Myth, and Magic", and the Ferris instruments will be represented in that exhibit. In addition to the instruments, we also have some of Ferris's correspondence with his wife while he was in the New York Hudson State Hospital in the 1920s. There is good potential for some interesting research here, but I must admit that we have not been able to delve into these instruments as they deserve. (Are there, for instance, recordings made from when the instruments were "broadcast over 'Believe it or not Ripley' program and pronounced the sweetest music ever heard" (as Ferris wrote)?



I would be happy to hear from anyone who has further information on Ferris.

... and so would the editor here at EMI. You can reach Ms. Windle at the Schubert Club, 302 Landmark Center, St. Paul, MN 55102.

FOR COMPUTER NETWORKERS: luigi-bob drake reports that a discussion group for instrument builders has come to life on InterNet. "The amount of activity generated in a single week," he says, "is pretty phenomenal (I've subscribed to lists that didn't generate as much traffic in a year), and while much of the interest is in fairly traditional instruments, there are a few misfits like us, and the level of discussion is quite knowledgeable."

KEN BUTLER, maker of the genre of playable sound objects he calls *Hybrid Instruments* recently sent the photo below showing the Headboard Grand Piano, from an exhibit at Test-Site Gallery in New York last year. The piece has twelve keys (one octave) which activate twelve motors with weed-eater fishline strummers which strum various combinations of seventeen strings, producing dissonant buzzing and droning discordant tones. The piano itself is assembled from street-found bed headboards and a single chair back. Among Ken's more recent work has been a performance at Roulette in New York with fifteen musicians playing hybrid instruments in a piece composed by David Soldier of Soldier String Quartet. Coming up at the end of February at the Kitchen, also in New York City, there will be a performance of his *TWO FRUIT FLIES ... a micro opera*, a multimedia theater piece vocalist & dancer Deena Emerson, once again featuring the hybrid instruments. Ken recently put together an informal photocopied catalog with about 35 pictures of the hybrid instruments. It's available for \$5 from 421 Wythe 2nd Floor, Brooklyn, NY 11211.

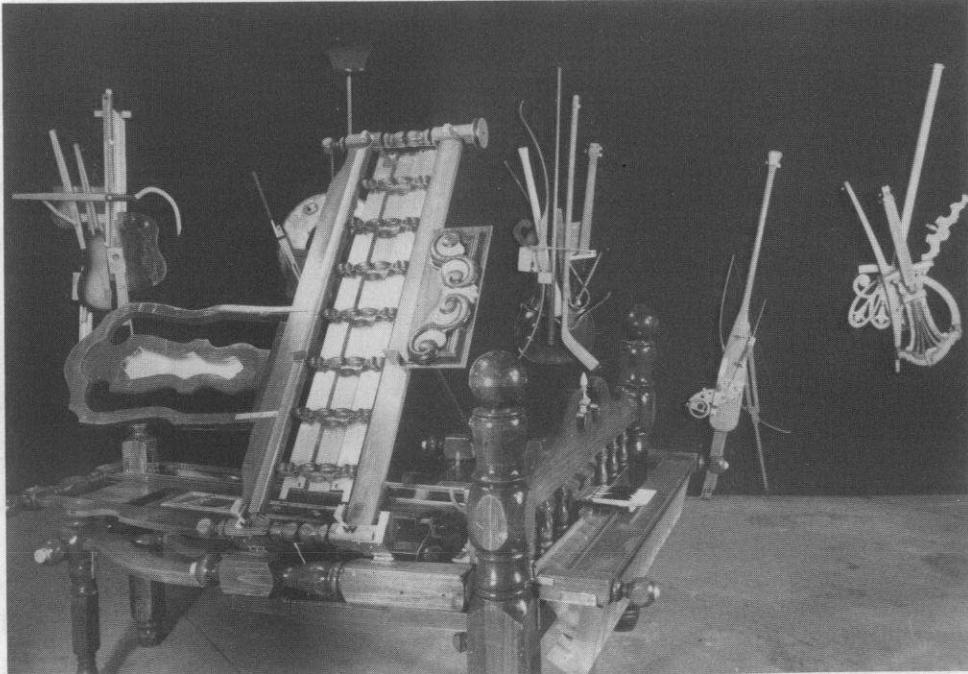
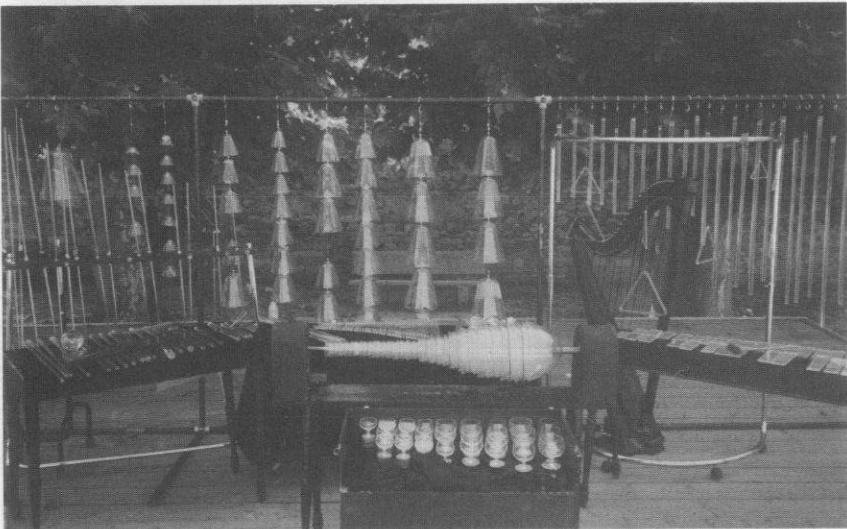
THE HOUSE ON THE ROCK is an extravagant, fancifully designed house and grounds, filled with a variety of exhibits, collections and novelties, that has become a major tourist attraction outside of Spring Green, Wisconsin. I have been hearing rumors that the several musical exhibits there, including all kinds of mechanical things and diverse sorts of instruments, are great. Being about 2,000 miles from the place, I have not been able to pop by, but I have managed to obtain their biographical book on the house's now-deceased, crazy-inspired mastermind, a man named Alex Jordan.

Alex Jordan: Architect of his Own Dream, by Doug Moe, doesn't provide comprehensive information on the musical exhibits at The House on the

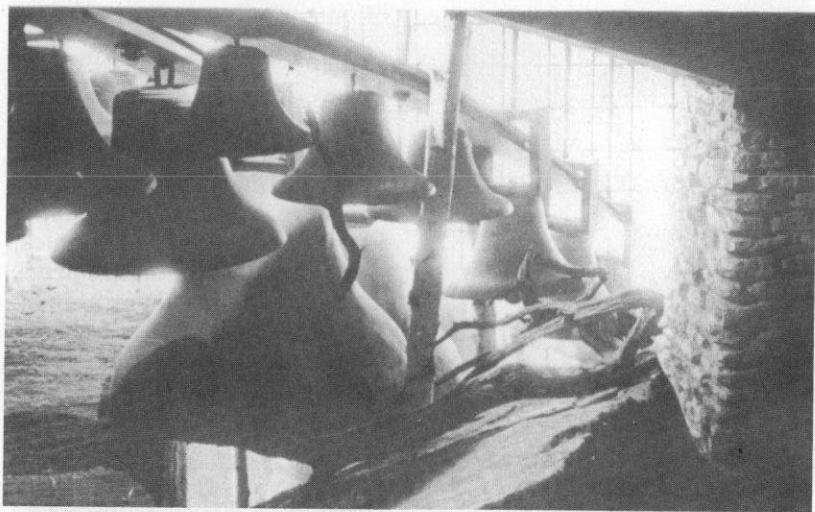


JEAN-CLAUDE CHAPUIS of Musiverre makes and performs with instruments of glass. Recently he sent along the photos of his instruments printed here, showing musical glasses, a Franklin-style glass harmonica, two sorts of glass bar instruments, glass bells, glass chimes ... Jean-Claude Chapuis can be reached at Musiverre, 64, rue Condorcet, 75009 Paris, France.

Photos below and right: Jean-Claude Chapuis and glass instruments.



Ken Butler's HEADBOARD GRAND PIANO, Test Site Gallery, New York, 1993.



Bell Gallery at The House on the Rock. From the House on the Rock archives.

Rock. But I was able to learn that the house contains a bell gallery of large carillon bells, a huge wind chime, and a great many theater organs, calliopes, musical automatons, music boxes, orchestrions, and other music machines, some of which are terrifically large and elaborate. Photographs appearing in the book depict a number of intriguing musical spectacles.

The House on the Rock is on Highway 23, Spring Green WI 53588, phone (608) 935-3639. For any readers who perchance get the opportunity to go there, maybe you can write and tell EMI & other readers more about it.

—BH

THE ORGANIZERS OF LAST SUMMER'S TUNING OF THE WORLD conference, the first international conference on acoustic ecology, have announced the formation of a new international organization. The World Forum for Acoustic Ecology is an interdisciplinary coalition of individuals and institutions concerned with the state of the world soundscape as an ecologically balanced entity. WFAE is interested in the effects of technological and human interventions on the acoustic environment, the sensitization of the ear towards the soundscape, the preservation of natural and indigenous soundscapes, the study of attitudes towards silence in different cultures, and the design of healthier and more pleasant environments.

WFAE's head offices are at Simon Fraser University, Dept of Communications, Burnaby, British Columbia. For more information contact Hildegard Westerkamp at (604) 879-0731.

LEV TERMIN, inventor of the theremin, died in November at the age of 97.

THERE'S A NEW NEWSLETTER OUT devoted to marimba and mbira, called *UTANDANDE*, and it is turning out to be a great resource. Issue #1 never reached us here at EMI; #2 (Oct 1993) did, and it's devoted to networking and resource lists; #3 (Dec 1993) did too, and it's full of builder's information, along with networking. See the "Recent Articles ..." at the end of this issue for more information on contents. Subscriptions are \$10/year from Paul Novitski, 1711 East Spruce Street, Seattle, WA 98122-5728; phone (206) 323-6592.

PEOPLE FREQUENTLY ASK whether we will ever have an experimental instrument makers' and players' convention. My answer (as editor of EMI) is always the same: you organize the convention, and I'll show up. And I'll have a good time.

But, at the prompting of a reader who has occasionally brought up the idea, let me float a few questions. First, if there were such a convention, would people really show up? Where would be a good place to have such a gathering? Would people be willing to pay registration fees to help cover costs — and how much? What sorts of activities should be planned? Who's bringing the pizza? If the idea of having a convention seems to you to be worth discussing further, or if you have opinions on these questions, please be in touch with the editor, Bart Hopkin, at EMI.

CORRECTION

In the December 1993 issue's article on Deagan Organ Chimes, we listed a set of chimes located at the Shrine to Music Museum at the University of North Dakota. That should have read South Dakota. Apologies to Dr. Margaret Banks and the Shrine to Music Museum, who deserved better, having lent a generous hand in the preparation of the article.

**the
improvisor**

1993

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(Sound Choice, No. 17).

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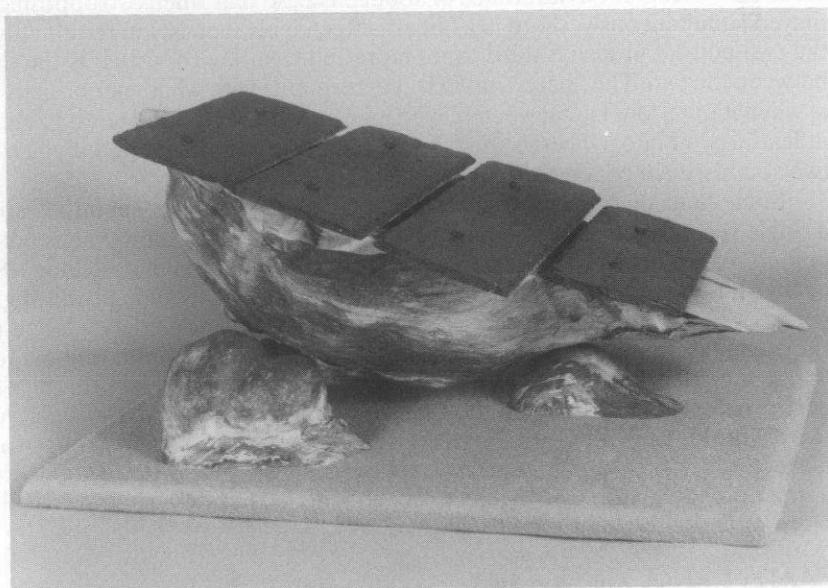
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foreign) shipping and handling.

ELEMENTAL MALLETS INSTRUMENTS

by Jim Doble

When I was a kid, I used to drive my mother crazy by raiding her cupboards for pots, pans, lids, spatulas, and the like and beating the daylights out of them to see what kind of noises I could come up with. Well, I'm still beating on pots. But in my maturity, I've expanded into also raiding dumps, salvage yards, barns, beaches, and the woods for other things to bang on, and somehow manage to make a living of it by building assorted mallet instruments.

I do what I can to use as much salvaged material as possible in my work. Having been raised a thrifty (and cheap) Yankee, it really turns my stomach to see the magnitude of wastefulness around me, and most always old materials enhance more than diminish the end product. Old metal tends to be a heavier gauge and a better quality than new. Salvaged, old, punk wood is much more interesting than new in terms of color, grain, texture, and often sound quality. When I can't find what I need to make an instrument out of salvage, I always turn to other local sources. In the musical instrument business there's a lot of use of imported tropical woods and domestic old growth, when there's almost always a beautiful sounding, less endangered local alternative. Here in New England, ash, spruce and poplar are examples of musically



under-utilized, local woods with good tonal possibilities.

You may notice that most of the following instruments are tuned pentatonically. Though I also make diatonic, chromatic, and experimentally tuned instruments, my standby is the pentatonic. I try to make instruments that anyone can enjoy playing, whether or not they consider themselves musical. A pentatonic scale encourages one to play entirely intuitively (since there's little previously written music), without the worry or aggravation of hitting "sour" notes. So it's ideal for kids, mentally and neurologically other-abled folks, and anyone lacking musical confidence, while it's a refreshing change for those of us who've gotten locked into certain diatonic musical patterns.

Well, enough preaching. Here's some of my instruments:

ROCKADINDA (above)

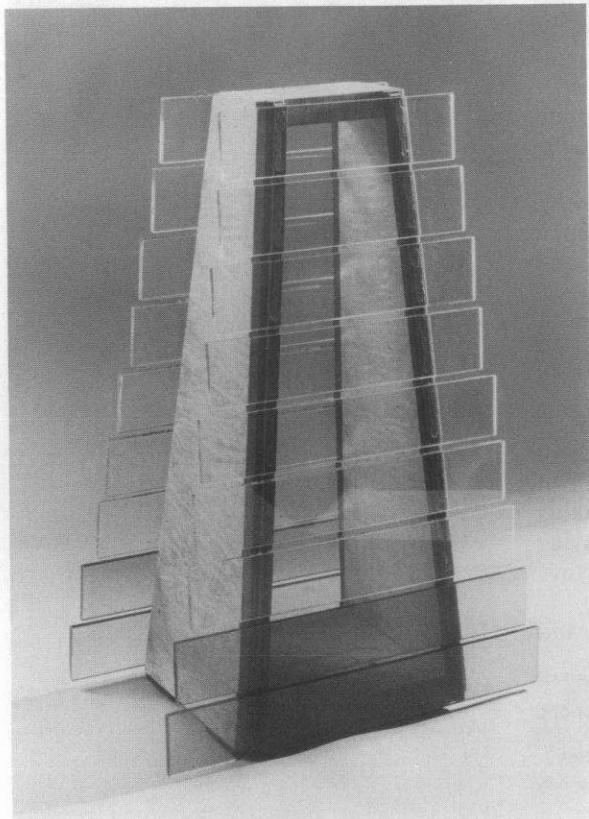
Stone is an incredible sound source. Its inherently slow vibration gives it an unusual timbre not found in other materials. The low tones are gutsy and rich with overtones, while the higher tones are piercing and clear.

The Rockadinda pictured consists of old roofing slate on a found, naturally hollowed, half rotten maple burl as base and resonator. I cut the slate into 4" strips with a nifty little gadget called a slate cutter (works similar to a paper cutter), and then fine tuned it by chipping at the ends with a brick hammer or gouging underneath with coarse sandpaper. The slate is mounted at the nodes over felt strips and loosely secured via nails covered with rubber tubing. The slate is fairly brittle, so I only play it with soft, light mallets.

FOUNTAIN (left)

Glass is one of the gentlest sound sources I've experienced. Being both soft and clear there is an unusual water-like quality to it. The vibration enters you without any resistance and soothes throughout the whole mind/spirit/body, making it ideal for mind alteration or sound healing work. Which is what Fountain's about.

Fountain was designed to gently lead one into a Theta mind state. Theta is happening when you're between consciousness and unconsciousness; the two halves of your brain are synchronized, your brain is literally expanded, and you're at your most intuitive, creative self. Most forms of meditation are geared for reaching and maintaining Theta, as are most "mind



machines" and subliminal tape recordings. Countless "primitive" (advanced) cultures induce trance states via Theta through music. The Tibetans and Balinese are the closest I'm aware of to using tuning methods like those described below.

Fountains' tuning is a western pentatonic (c,d,f,g,a).The two sides are tuned identically except for a difference of about 5 Hz., so that when two opposing keys are played simultaneously, there is a "beat" effect. This means you're not only hearing the two notes, but also a third tone, more felt than heard, which is the difference between the two. The "beat", at 5 Hz, corresponds with what your brain is vibrating at when it's in a low Theta; when played long enough, your mind tends to entrain with it, leading you into a Theta state.* This effect is greatly magnified if you isolate the two sounds, each coming into one ear.

Some hints on using glass keys: I buy 1/4" plate glass pre-cut into 2" strips from a single sheet for consistent tuning via consistent density. Good tone is pretty much limited to two octaves unless you cut a longer key and laminate either 1/8" or 1/4" chunks under the ends. When laminating, I pre-check the tuning by laying the keys perfectly level over felt at the nodes. I then put some water on the ends and press the short chunks on top. The water acts as a temporary binder, allowing me to change the size of the chunks or slide them along the top of the key for fine-tuning. I permanently mount chunks to the keys and then mount the keys to a soft neoprene foam with Household Goop (you can use silicon, but Goop is stronger and dries perfectly clear). I also sometimes mount the glass by drilling holes at the nodes with a spear point bit, and securing them loosely with rubber tubing covered nails. This is more work, but makes for better tone.

EARTH DRUM (above right)

My favorite creation! I found this partially hollowed, half rotten log by the side of the road. An apiarist had cut the tree up to extract a bee hive. The moose-hide head was saved from the trash of a local butcher. Notice the head is basically pentagonal as opposed to round. This creates several tonal centers, making available some dynamic tone combinations. It's an incredibly powerful drum: the extremely low resonant tones vibrate one through the lower chakras. It's currently sitting in the third floor of my barn, and when just lightly tapped, shakes the whole building.



MONKEY GONG (lower right)

Made from an old propane tank, this guy usually hangs by his ears to give him the best ring. The sound definitely has more of the flavor of a gong than a tongue drum and can be mellowed by adding water. There are two primary tones produced by hitting the ends of the tongues, and a bunch of secondary tones by hitting anywhere else on the body or on the various parts of the head. The eyes have an especially nice sound.

Older, thicker tanks sound the best. Holes drilled at the base of the tongues would prevent the need for the repair welds you see. The body likes soft mallets while the head prefers hard. Anyone attempting to build something similar should read below.

Caution: Propane fumes, or about any type of flammable gas fumes, linger for an incredibly long time and are extremely explosive. To avoid being blown up, I let mine air out for at least several months, run water through them for a couple of days, and then blow a good volume of air through them while I'm cutting with a grinder. Anyone not sure of how to handle explosive fumes should either stay away from them or consult with someone who is sure.

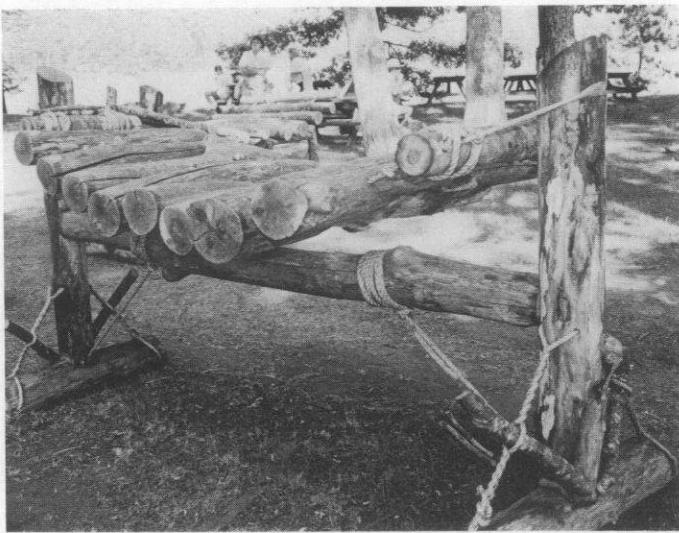
LOG AMADINDA (Next page, top)

This is one of my interpretations of the Ugandan *Amadinda*. The Baganda of southern Uganda rough-hew but finely tune dense logs, and lay them on a couple of fresh banana stems. There are always three players — one playing a rhythm striking with both hands an octave apart, one playing a syncopated rhythm, and a third playing just the top two keys whenever one of the others hits one of those notes an octave down. It makes for some incredible music.

This instrument consists of pentatonically tuned half-rotten maple keys and



*As measured on a electroencephalograph (EEG), certain brain-wave frequencies tend to correspond with certain brain activity: 13-50 Hz (Beta) your mind's actively engaged, 8-13 Hz (Alpha) indicates relaxation, 4-7 Hz (Theta) as described above, and 0.5-4 Hz (Delta) is deep sleep. Some good books with information about musical effects on the brain are: **Sounding the Inner Landscape** by Kay Gardner, **Mega Brain** by Michael Hutchison, and most any of Don Campbell's books.



TANK DRUM (below left)

This is a design I've recently been dabbling with. It's easily made by finding an old thick-walled water heater or water pressure tank, cutting out various-sized tongues in the top, and then drilling holes at the base of the tongues to postpone metal fatigue. The tone can be mellowed or altered by partially filling the tank with water. Very soft, natural rubber mallets produce the clearest tone.

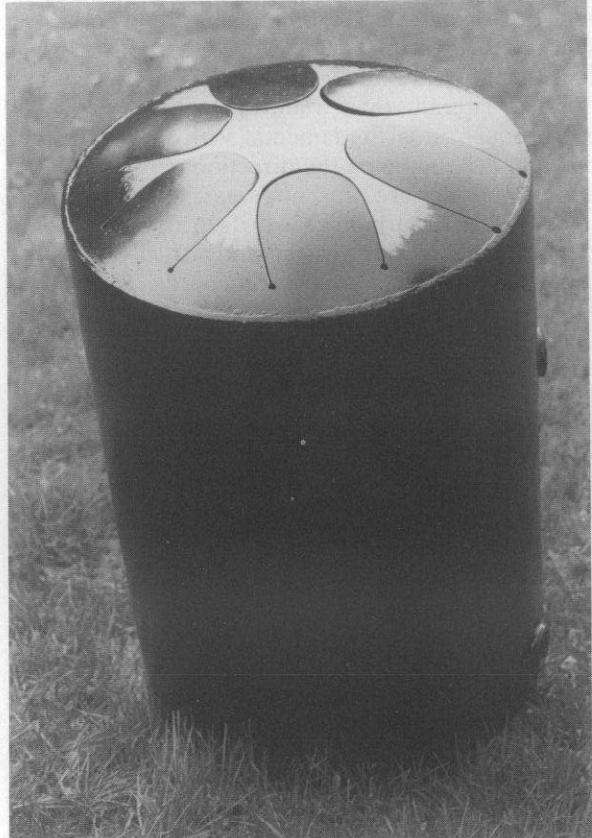
The sound is deep, rich and vibrant — somewhere between a gong and a drum. It's an easy instrument to sink into and play for hours, oblivious of time and space.

BASIC XYLOPHONE CONSTRUCTION

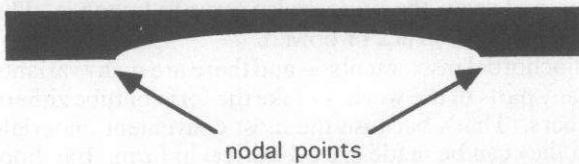
Xylophones were probably one of peoples' first musical instruments, and the feel of playing them is most firmly entrenched in our primal core. I've seen babies barely able to pick up mallets know just what to do with them.

Just about any one can make a xylophone out of just about anything — i.e. old shoes, cut up tires, bones, V.W. hoods, etc. ... (official definition has a xylophone made of wood, so I guess we'd have to call them shodaphone, blimpaphone, bonaphone, volkphone, and et ceteraphone). The main trick is just mounting whatever it is in a way that it will vibrate minimally hampered.

For the sake of simplicity, I'll describe the how-tos of building a wood xylophone, but the same techniques could be applied to any material. First you take a chunk of wood (straight, clear, dense grain is ideal, but I've gotten neat sounds out of pretty gnarly looking stuff) and cut it to a length that suits. Now, find the nodes by either measuring 22.5% of the length in from the ends or sprinkling some salt along the top and tapping it lightly — the salt will collect at the nodes. Support the wood under the nodes with something soft, like felt, foam, or balled up socks. Tune it by cutting it shorter to raise the tone, or gouging under the middle to lower the tone. You can also raise the pitch slightly by thinning the ends, and lower the pitch by laminating under the ends or making a simple saw slice in the middle. The ideal shape for a xylophone bar is something like this:



side view

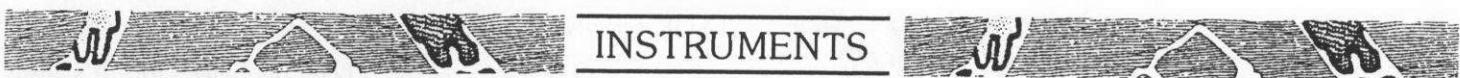


This general shape gives you the clearest deep tones — it does away with most of the overtones on the low end while you can't hear the overtones at the high end. But shaping it thus can be a lot of work and isn't necessary to get a decent sound out of any but the very low tones.

After you're done tuning all the keys, you'll want to re-figure all the nodes and mount the keys at those points. If you gouged a lot under some keys, use the salt method, because gouging moves the nodes outward. As long as the keys are supported by something soft and are not bound in a way as to restrict their vibration, mounting possibilities are limited only to the scope of one's imagination. As are the kind of mallets you use — hard mallets tend to bring out the high end and soft mallets the low.

Imagination is our best resource. Go with it! Let me know if you come up with something really weird.

Jim Doble can be reached at Elemental Design, PO Box 565, Union, ME 04862; telephone (207) 785-2212.



THE BAMBOOLIN: A JAMAICAN IDIOCHORD ZITHER

With Additional Notes on Idiochords

By Bart Hopkin

This is the third and last in EMI's current series of articles on Jamaican musical instruments and instrument makers.

Two idiochordal instruments from the island of Jamaica are the main focus for this article and the companion article that follows. The larger of the two, discussed in Richard Graham's article starting on page 14, is the *benta*. It is a "traditional" instrument, which is to say that its origins lie farther back in time and the individuals who contributed to its development aren't known to us by name. The smaller of the two, discussed here below, is the *Bamboolin*. It is a relatively recent invention, the work of a single creative individual. I will also take this opportunity to talk more broadly about idiochordal instruments. We'll start with that backdrop of general information.

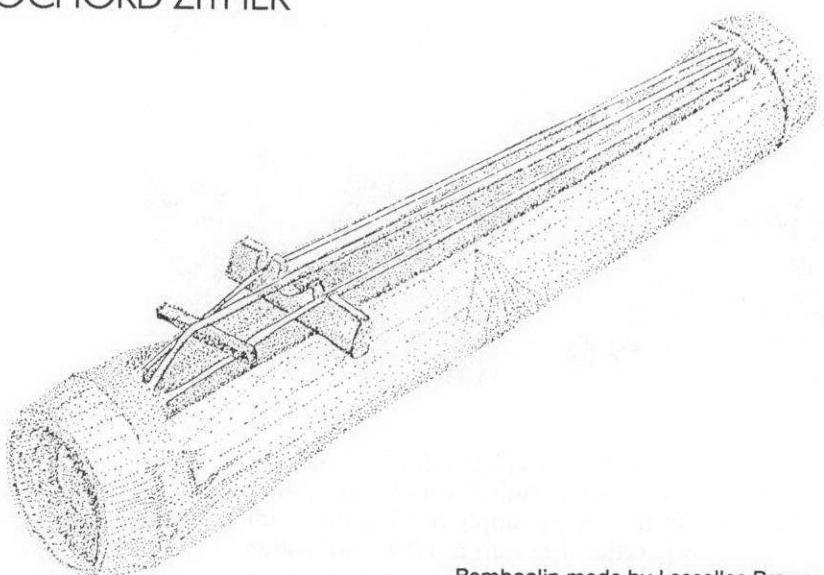
IDIOCHORDS — SOME BACKGROUND

Idiochord is the term used to denote a musical instrument having a long, thin strip of fibrous material raised from the surface of the body of the instrument to function as a musical string.* The body of the instrument is some sort of woody stalk such as bamboo, and the strip that serves as the string is lifted from the stalk, but left attached at each end. It is held up from the body by one or two bridges inserted underneath. By forcing the string up and away, the bridges also serve to tighten it. The string can be plucked, struck or bowed.

Most idiochordal instruments — and there are many variants found in many parts of the world — take the form of tube zithers or stick zithers. That's because the most convenient materials from which they can be made are cylindrical in form. Bamboo, as mentioned, is most common. Wood from the raffia palm tree sometimes serves where bamboo does not grow.

Bamboo is perfect for the purpose, with its rigid, yet highly fibrous woody surface. Its hollow form makes for an excellent instrument body, providing both surface radiation and internal air resonance. Most bamboo idiochords have soundholes cut into the body of the instrument in one or more places, to aid in bringing the air resonance into play. Raffia stalks, on the other hand, are not naturally hollow. Where they are used, either the stalk is hollowed out, or separate resonators in the form of gourd or calabash are attached to the stick to improve sound radiation.

With both these plants the strong, woody fibers make it possible to raise strings that are fairly narrow — down to less than an eighth of an inch in thickness — yet strong enough to withstand substantial tension. This allows them to produce clear



Bamboolin made by Lascelles Brown.
Drawing by Robin Goodfellow

tones through a fairly high range. The tone quality is slightly percussive, with noticeable plucking noise and little sustain. The volume is usually fairly modest. In the tone, the fundamental dominates. Overtones (which would be inharmonic, given the rigidity and the likely irregularities in string shape) generally do not contribute significantly. Despite all that, very thin idiochordal strings under high tension can sound remarkably like the strings on other instruments, with a clear and pleasant tone. Thicker idiochord strings, on the other hand, tend to have a distinct quality of their own. This is especially true for strings that are wider than they are thick. Such strings are more rigid when they vibrate laterally than when they vibrate vertically. This lets them produce a dual fundamental, with one or the other tone predominant depending on the direction of the pluck. In a typical pluck both tones are present at least to some degree, so that the string seems to harmonize with itself. If the two tones form an agreeable interval, it is a quaint and attractive effect.

The bridges play an essential role in idiochords. The bridges may be small sections of bamboo, or small sticks of any other sort. Forcing a bridge under the string raises the tension; the taller the bridge, the greater the tension. A single bridge near the center divides the string into two usable vibrating segments. If there are to be two bridges they can be pushed toward the ends, forming a single vibrating segment between them. The farther the bridges are pushed toward the ends, the greater the tension on the string and the higher the pitch (the increase in tension usually overrides the effect of the increasing string length). Thus the bridges can serve as a tuning mechanism.

It's common to wrap several rounds of strong cord or wire around the stalk at the ends, where the string rejoins the body. This prevents it pulling out beyond that point, and eventually separating entirely. Moving the ring or wrap farther up along the string, so as to effectively shorten it, can also serve for tuning.

The simplest idiochords consist of a single string lifted from a stalk. More common are instruments with several strings, and a few types may have a dozen or more. Another type is the raft

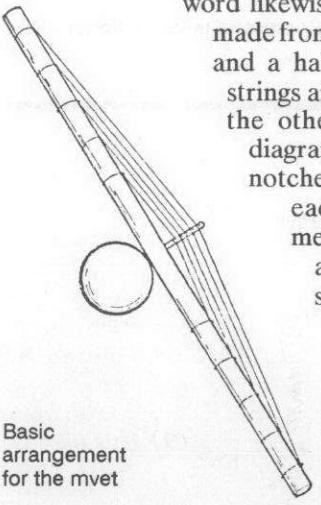
*The prefix "idio" here means "self," the idea being that the strings are formed from the instrument body itself. The contrasting term is "heterochord", referring to instruments having attached strings of a separate material, as with most familiar string instruments.

zither. Several relatively narrow stalks, each with one raised string, are bound together side by side to form a raft-like many-stringed zither.

The greatest concentrations of idiochords are in Southeast Asia and nearby Pacific island areas, particularly Malaysia, Indonesia, New Guinea, and so forth. Some appear in India as well, and in West Africa (Camaroon and surrounding countries), East Africa (Tanzania), and Madagascar. The popular pictorial encyclopedia *Musical Instruments of the World* (New York: Facts on File, 1976) depicts some idiochords from Yugoslavia, although I've been unable to verify this. And, as we are seeing in this article, idiochords have travelled to at least some parts the new world, having been played in Jamaica, and reportedly in some other areas as well by both Native Americans and European Americans. In the following paragraphs we will have a quick look at three of the more important old world types.

The instrument called *keranting* exists in several forms, and under several related names, in Malaysia. It is made from a single joint of large diameter bamboo, closed at each end by a node. There are anywhere from two to seven strings raised from the surface, played by plucking or, on a few varieties, by striking with hard sticks. The overall length varies depending on the type, from a foot or so long up to around five feet. Bridges inserted under the strings serve for tuning, and rings of rattan prevent the strings from splitting away at the ends. Some forms have bamboo frets beneath the strings. There are holes in the bamboo to bring the air resonance into play, and in some areas the player incorporates aerophonic percussion sounds by clumping one hand over the end of the bamboo. In some recent instruments the traditional fiber strings have been replaced by strings of wire or rattan.

In Gabon, the Cameroon and nearby areas there is an instrument called *mvet*. It is used to accompany performances in a highly developed tradition of dance and spoken word likewise called *mvet*. The instrument is



made from a stalk of raffia palm, three to four and a half feet long. Three, four or five strings are raised from the raffia one above the other, in the manner shown in the diagram. They are supported by a tall, notched bridge at the center, dividing each string into two vibrating segments. There is a ring of strong cord around the stalk at each end of each string, to prevent tearing out and to aid in tuning. Arrayed on the opposite side of the stalk are one or as many as six resonators in the form of calabashes. The player holds the central calabash, which is open at the back, against his chest while plucking the strings. He

rocks it to open and close the air chamber, causing shifting resonances. In contemporary *mvet*, the fiber strings are often replaced with heterochordal strings of wire.

The *valiha* is perhaps the most important traditional instrument for island nation of Madagascar, off of Africa's south east coast. There are several variant types in different parts of the island, and it has continued to evolve as in recent decades makers have made a number of changes in the design. The forms include both bamboo and hollowed raffia types. Fourteen

Basic arrangement for the *mvet*

strings raised from a single stalk has been typical, occasionally ranging up to twenty or more. Movable bridges serve to raise the strings and adjust the tuning. A separate resonator, which may be a large metal can (such as a kerosine tin), may be added. At one time the *valiha* had ceremonial associations. Over the years it has become a popular secular instrument, and some truly beautiful playing styles have developed, somewhat reminiscent of the better-known *kora* music from the other side of the continent. Many contemporary *valiha* are wire-strung.

In our discussion of these three important idiochord types you will have noticed that in each case the makers recently have tended to replace the traditional idiochordal strings with wire. It is true that wire strings ring out more clearly, sustain better, are easier to play and easier to tune than natural raised fiber. As instrumental traditions become more sophisticated, these qualities become essential. And anyone who has heard the magnificent wire-strung *valiha* music coming out of Madagascar in recent years will surely have no complaints. Still, it will be a shame if all the world becomes wire- or nylon-strung, if we thenceforth hear only that one sort of string sound in the music all around, and if the peculiar sound of idiochordal strings is lost and forgotten.

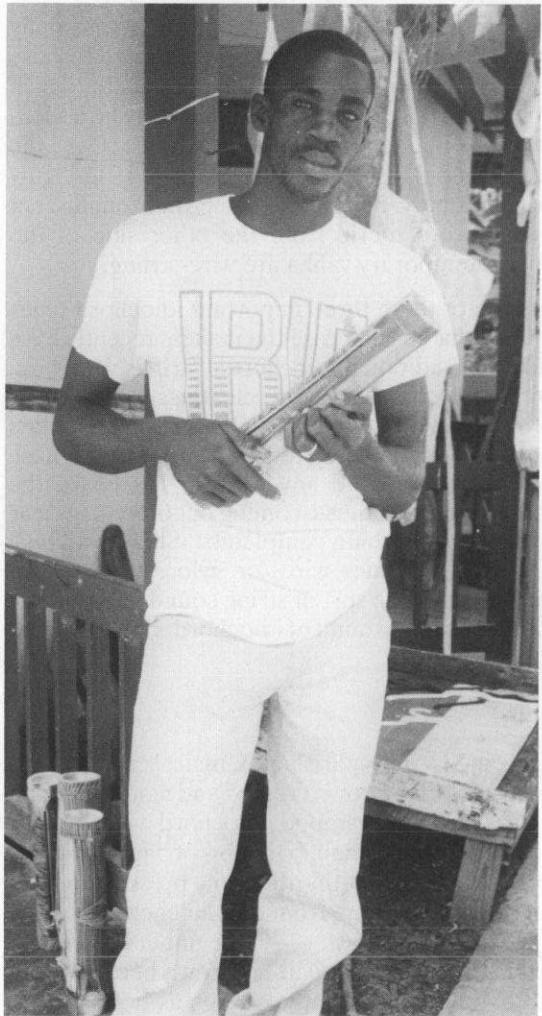
BAMBOOLIN

Some years ago, in St. Ann's parish on Jamaica's north coast, a craftsman named Jonathan Brown created and named the first bamboolin. It was a small bamboo idiochord with several strings, which he played with a small, rigid bow of bamboo wood. By wetting the bow and playing with substantial pressure, he was able to get a clear, sustained tone from the idiochordal strings. The technique is difficult to master — a beginner can get no more than a sickly squeal — but Jonathan Brown became quite skilled. He also learned to finger the strings as he bowed to extend the range well beyond the pitches available on the open strings. Since no repertoire for the instrument existed, he played whatever appealed to him, including popular songs and lots of hummable, danceable melodies. He became known in his part of the island for the invention and his skill with it, and played frequently at social events.

In 1988, at about 65 years of age, Jonathan Brown died. Two of his sons have continued making bamboolins. I spoke with Lascelles Brown, locally known as "Devil", at his shop at Dunn's River Falls near Ocho Rios, early in 1992. Lascelles and his brother, widely known as "Rat", sell the bamboolins at the crafts park alongside the falls. (The falls, being extraordinarily beautiful, attract a steady stream of tourists as well as local people). Lascelles was able to produce a clear and attractive bowed tone on the bamboolin, though he made no claim to play well. His brother, he said, plays better, yet none can match the fabled facility of their father.

How did Jonathan Brown come up with the idea for a bowed idiochord? The standard answer, from those that I asked, was simply that the idea was entirely his own. He may or may not have been familiar with the big idiochord found elsewhere in the island called *benta*, described later in this article, but *benta* is really a very different instrument. It has been suggested that other idiochords may at one time have existed in the parish of Trelawny, but I can't claim to know anything more about this. Jonathan Brown, in any case, can be credited with developing an idea, mastering the skill required to show its potential, and sharing it with a great many people.

And now, a fuller description of the bamboolin. The instrument is made from a single section of bamboo, about 16 inches



Lascelles Brown holding one of his bamboolins at Dunn's River Falls Crafts Park, near Ocho Rios, Jamaica. Several more bamboolins can be seen in the lower left of the picture.

conventional strings. The instrument that I picked up was very nicely tuned to a just minor triad, and it held that tuning well.

And now the sad part of the story. I purchased a fine bamboolin (at very reasonable cost) from Lascelles Brown at Dunn's River, and it later came with me back to the United States. Shortly after that I passed it on to EMI's graphic artist, Robin Goodfellow, to make a drawing of it to go along with this article. She did, and you can see her work on page 10. Not long after, I got a call from Robin. I couldn't help but notice a note of distress in her voice. My bamboolin, she told me, was suffering from a serious infestation of some woodboring creature. It was rapidly turning to dust. Worse, there was danger that the voracious little bugs would next move on to Robin's house. She had contacted the pest control people, and they had recommended that she remove the bamboo to a remote locale and burn it immediately.

So she burned it. My bamboolin is gone, but Robin's house, thank God, is still standing.

Bamboolin maker Lascelles Brown can be reached at Shop #10, Dunn's River Crafts Park, Ocho Rios, Jamaica.

The author thanks Marjorie Whylie, whose knowledge of Jamaican musical traditions seems to have no end, and whose assistance with this and earlier articles in this series on Jamaican instruments has been invaluable.

Thanks also to Derrick Johnson and the Jamaica School of Music, for opening the school's instruments collection to me, assisting with photography and providing additional information.

Most of the information in this article on idiochords around the world comes from these general sources:

Stanley Sadie, Ed.: **New Grove Dictionary of Musical Instruments** (NY: Grove's Dictionaries of Music Inc., 1984)

Baines, Anthony: **The Oxford Companion to Musical Instruments** (NY: Oxford University Press, 1992)

Diagram Group: **Musical Instruments of the World** (NY: Facts on File, 1976)

Sibyl Marcuse: **Musical Instruments: A Comprehensive Dictionary** (NY: W.W. Norton & Co., 1964)

the ones that I saw. To raise them, a section of the surface of the bamboo about an inch and a half wide is carved out around and beneath the strands for the strings. (The carved out section shows white-ish against the darker bamboo bark in the photo.)

The strings are quite narrow, at less than an eighth of an inch. They run all the way from the slight rise of the bamboo joint at one end to the corresponding rise at opposite end. There is no wire or cord wrap at the ends to stop their separating entirely; apparently their ending at the joint helps prevent this. They are held up and tensed by a single bridge near one end, made from a small piece of bamboo wood. In the short space behind the bridge, another very small stick of bamboo is wedged between the strings. By moving this stick forward or back, and by angling it this way and that, the strings can be tuned more or less independently.

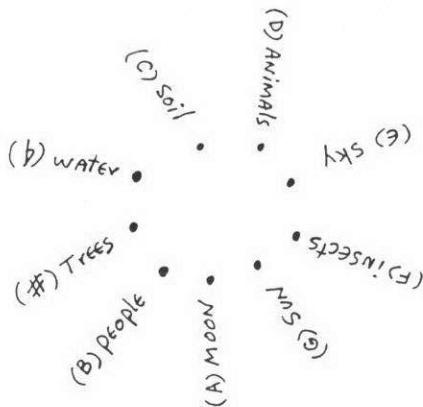
The ends of the instrument body are left closed by the natural node of the bamboo. There is an opening, a little under an inch wide and about twelve inches long, cut in the side of the bamboo, to one side of the strings. This allows the air resonance to enhance the string tones. It also makes for great percussion. When the player uses the wooden bow to strike the bamboo tube alongside the slit, it gives a very clear, strong and loud woodblock sound.

The surface of the bamboo is decorated with carvings and notations. By making shallow cuts into the wood, the maker removes the dark outer skin to expose the whiter wood beneath, making high-contrast designs without requiring deep carving.

The bow is a wooden stick cut from a larger piece of bamboo, a bit less than an inch wide and about a foot long.

The thin strings, set under high tension, sound much like

Medicine Music



ECOSCORE by Steve Heitzeg (one of a series).

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Appendix

NOTES ON MAKING IDIOCHORDS

As a part of my research for this article, I located an old section of large diameter bamboo, and spent some time experimenting with the process of lifting fiber strings from it. What follows here are some of my observations on the process of idiochord making. Chances are that others reading this will have had much more experience with idiochords than my brief foray. With that in mind, I encourage anyone with corrections or additional information to write to EMI.

The raw material for an idiochord tube zither typically is a single section of large diameter bamboo stopped at each end by the natural node. The tools I found most useful for lifting the fibers were a utility knife and a small chisel. A good start to the process is to define the sides of the string-to-be by drawing the knife along the surface of the bamboo, end-to-end in two parallel lines, spaced according to the intended width of the string. Make the cuts as long as the intended string. They may cover most of the tube length or a shorter section. Run the knife in each cut several times to make it sufficiently deep. After making the cuts, it is still difficult to begin lifting the string out, because you can't get underneath it. The solution is to cut away the wood on either side, to a depth corresponding to the thickness of the string-to-be. This leaves the string as a raised strip in a shallow trough. That done, you can use the knife to cut under the string and begin lifting it. From there on it's fairly easy to pry it up and insert small pieces of wood (or whatever) to serve as bridges. Push or tap the bridges toward the extreme edges. After that you should have a workable string — try plucking it. Push the bridges farther to the extremes if you wish to increase the effective sounding length, simultaneously increase tension, and (in most cases) raise the pitch.

The width and thickness of the string are important determinants of tone quality. You can trim the string with the knife to alter these features. Begin by checking under the string to make sure that it's properly separated from the main body over its full length. Trim any splinters or frayed sections extending out and interfering with free vibration.

As mentioned in the accompanying article, thicker strings will have a more percussive sound, with less sustain and more plucking noise. Still, the pitch is clear enough, and the effect can be an attractive one. Thinner strings, especially under high tension, produce a tone more like a conventional string. Of course, a too-thin string will be too weak and will break. Something over a sixteenth of an inch in thickness might be a good minimum.

A string that is uniform in thickness over its entire vibrating length will in theory produce a more musical tone than one with an irregular shape, especially with very thin strings. In practice, however, you may often find sloppily-shaped strings producing a pleasant enough sound. (Irregularities in shape, as well as the stiffness inherent in thick strings, throw the string's overtone series out of kilter. But these heavy fiber strings have so much internal damping that overtones contribute relatively little to the sound anyway.)

Thinning the string also lowers the pitch, by reducing rigidity. The greatest effect comes from thinning near the bridges. In this respect, these fiber strings differ from conventional strings, in which the role of rigidity ideally is minimal.

Strings that are wider than they are thick will produce a dual fundamental — two tones sounding simultaneously in response to a typical pluck. The direction of plucking determines which

of the two tones will sound louder: plucking in the direction of the string's wider dimension will yield more of the higher tone. For many musical purposes a squarish string, which should do a better job of producing a single true tone, will be preferable. If that's what you want, you can trim the string with the knife to square it (or, if you wish to be more exacting, round it). On the other hand, you may like the dual fundamental effect. If so, consider the interval between the tones. Some intervals are more attractive than others. In particular, close intervals of a major second or less are not so appealing. You can tune the interval by shaping the string: make it flatter and wider for a larger interval; make it more square for a smaller interval.

Fiber strings can be sounded by plucking, striking or bowing. Plucking is most common. Striking works best with light wooden or metal beaters, such as a small stick. A coating of something soft over the striking surface may produce a pleasanter sound. With bowing, in my experience, it is difficult to bring out a clear and attractive tone. But idiochords are bowed in various parts of the world, so don't take my word for it. Often a hard stick serves as the bow, as with the moistened piece of bamboo used on the bamboolin. Horsehair bows or the equivalent will also work. Don't bow near the bridge as with a violin; the string will squeal. Bow near the center of the string to bring out a strong fundamental.

The natural enclosure of the hollow bamboo tube can add an air resonance that enriches the instrument's tone, like the sound chamber in a violin or guitar. To bring this out, there must be an opening somewhere in the bamboo. The location of the opening is not critical, but the size does make a difference. A larger opening makes for a more diffuse resonance over a higher frequency range. A smaller opening makes for resonance over a narrower range in the lower frequencies. You can test the air resonance pitch by blowing over the edge of the opening, flute-like, and listening for the pitch of the breathy tone that results. By adjusting the opening size you might even be able to tune the air resonance to match a certain string's pitch, which should yield a noticeably richer tone when the string sounds. The idea of tuning the air resonance to the string pitch makes the most sense for instruments having a single string on a single piece of bamboo. It would be ideal for a raft zither, having many pieces of bamboo with one string each. (The tuned air resonance approach works great with bamboo tongue drums, but I haven't tested it with idiochords, so these notes are tentative.)

Most well-made idiochords have rings of cord or wire where the strings rejoin the body to prevent their tearing out completely. This is a wise precaution. The string does tend to tear out easily along the body of the instrument. Yet I have been surprised at how well the string ends hold when they reach the node at the end of the bamboo body, even under high tension and without wraps.

You can add a small weight of some kind to the center of an idiochordal string, as is done with at least one variety of Pacific island idiochord. The weight lowers the pitch, increases sustain, and may seem to create a fuller or more resonant tone.

The bamboo I was working with was well seasoned. The bamboolin described in the accompanying article had been worked green. One could speculate that green bamboo might be easier to work initially but would be subject to detuning, cracking and other changes over time.



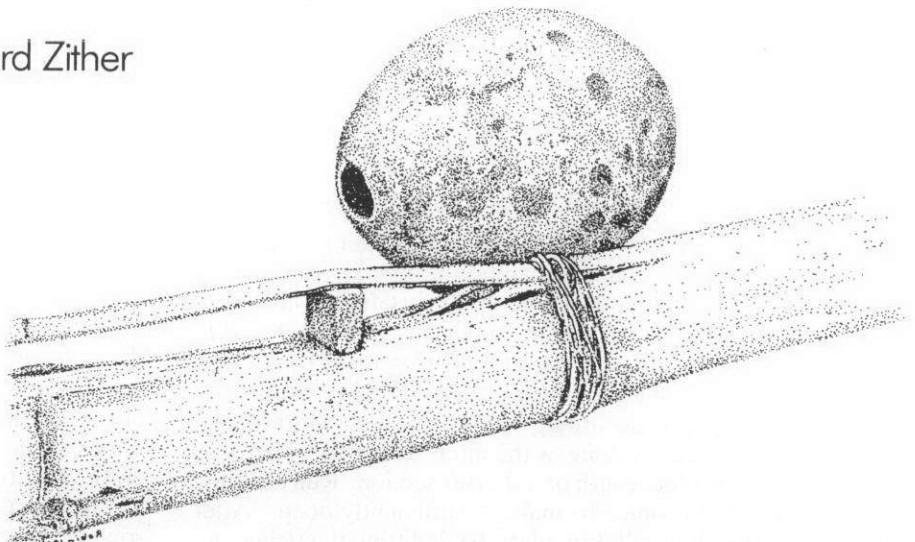
THE BENTA:

An African-Derived Glissed Idiochord Zither
of Eastern Jamaica

By Richard Graham

In this article I will be focusing on the *benta*, African-Jamaican glissed idiochord zither that is a variant of a trans-Atlantic organological complex originating in West Central Africa. The instruments in this complex are created from a basic African design which serves as a cultural template for organological innovations by inventive makers in Brazil, Chile, Colombia, Jamaica, the United States, and Venezuela (Graham 1991:10). The African antecedents of these Diasporan chordophones appear in two different forms, idiochord zithers and heterochord musical bows (Kubik 1970:36). In most instances these are multiple player instruments, involving two or three musicians with assigned roles. Player #1 will strike the string(s) with a pair of sticks as player #2 stops and glisses the string(s) with a calabash, knife, or similar hard object. In some variants a third player helps steady the instrument, also stopping the string with a hard implement. Both of these variants were present in Jamaica, although the idiochord zither is the only extant model there today, being found in the parishes of the eastern third of the island.

To make the *benta*, Jamaicans cut a long piece of bamboo (*bambusa dendrocalamus*) while it is still green, and hence pliable. As with most folk instruments hewn from organic materials, the dimensions of each model vary, though a six foot length and five inch diameter would be an average size. A piece of the bamboo's unripened skin is separated carefully with a sharp knife to produce a ribbon of one inch in width for an unbroken length of four feet. This ribbon "string" remains attached at each end of the bamboo, and several rounds of strong

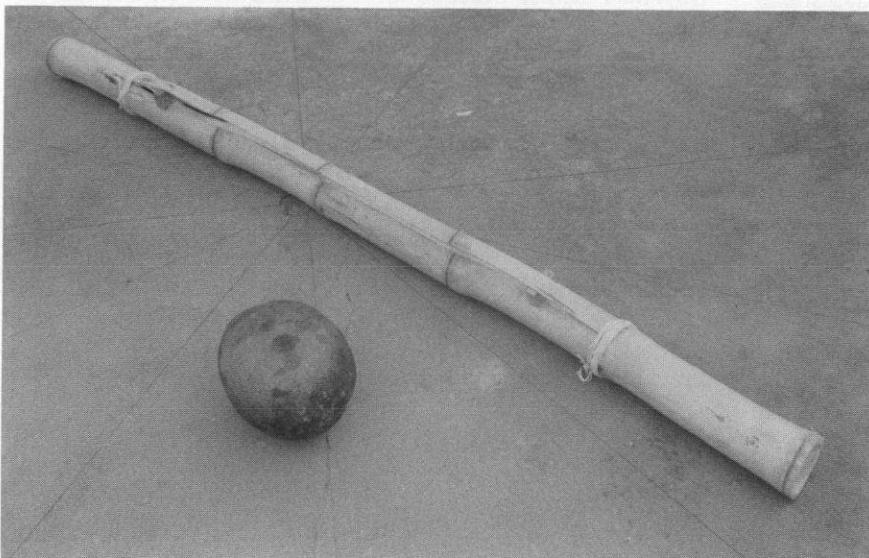


twine are tied around each end to prevent further splitting. At times more than one ribbon string is sliced from the bamboo's corpus, rendering a multi-string variant of the *benta*'s basic design. Next, two wooden bridges are wedged underneath the fiber string to tighten it and raise it from the bamboo. The instrument is then allowed to dry in the warm Caribbean sunlight until it becomes rigid and ready to play.

The *benta*'s noter/slider is prepared from a round dry gourd (*cucurbita*) whose contents have been emptied through a small hole bored in one end. This hole also serves as a finger-hold, the player inserting one or more digits inside it to facilitate greater control during performance. Next, two durable sticks about twelve inches long are prepared from any local wood that is deemed suitable, and the *benta* laid horizontally over two cinder blocks or a pair of chairs. Sitting astride these with the *benta* passing between their legs, player #1 strikes the idiochord string(s) with the two sticks while player #2 manipulates the gourd noter/slider against the string in a rolling motion, producing glissando. The gourd also serves as a subsidiary resonator, and when the air resonance inside it happens to match the pitch

of the string(s) at any contact point, the *benta* emits its richest sound. Open tones are produced by removing the gourd from the fiber string(s), and a number of other notes may be obtained by pressing the gourd against it at different points, although these aren't always clearly defined. The *benta*'s practical range is less than an octave, and Jamaicans seem to appreciate it more for its percussive effects than its melodic abilities.

In St. Mary parish in eastern Jamaica, a three player variant of the *benta* is found. Here player #1 stands at front center of the instrument striking the fiber string(s) with two sticks, while player #2 sits astride one end of the *benta* using the gourd noter/slider as in the two-player model. A third performer, player #3, sits opposite, astride



Left: **Benta**, made by Mr. Vandy Mitchell of Whitewater, St. Mary, Jamaica.

From the collection of the Jamaica School of Music.

Billy Lawrence (left) and Leaford McFarlane (right) performing on the benta.
Photo of the benta players by Maria Lacona, courtesy Rex Nettleford.



the other end of the *benta*, steadying it with one hand while playing one or more *shakka* rattles with the free hand. This three player practice is replicated in the performance of the *carangano* zither of Curiepe, Venezuela, another Diasporan variant of this African-derived complex of chordophones (see the figure below).

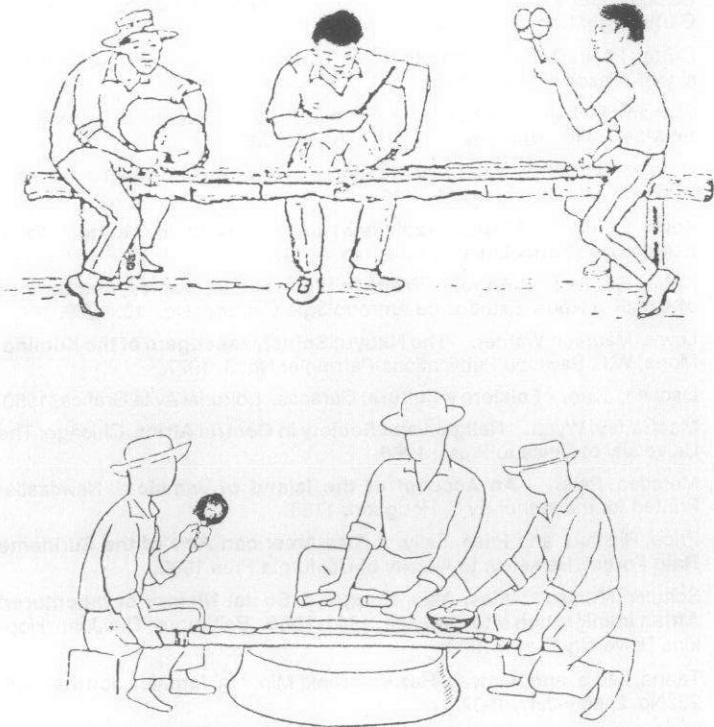
The *benta* developed in Jamaica as a direct result of the mass movement of African Peoples into the island, both slaves and indentured laborers. The slave trade to Jamaica was a multi-track, multi-time phenomenon, involving a number of different African ethnic groups from various geographical regions, and resulting in the forcible migration of upwards of one million human beings (Curtin 1989:160). The interpenetrating of these various African ethnic groups in Jamaica resulted in a massive cultural interchange, producing a pan-African society with new values. Where social conditions or demographics allowed, African ethnic/cultural cluster groups did occur, especially the *Bongo* people of the eastern third of the island. The *Bongo* are the descendants of Kongo/Angolan indentured laborers transported to post-emancipation Jamaican sugar plantations by the British government in the mid-nineteenth century (Schuler 1980:45-109).

Due to outmarriage, the *Bongo* designation has become more of a cultural distinction than a genealogical one today. However, important Kongo/Angolan cultural extensions are still found within this cluster group, albeit in Jamaicanized

forms. Some of these African-derived institutions and cultural expressions include religious beliefs and canonical practices (Brathwaite 1978: 46), Bantu languages (Bilby and Bunseki 1983:65), dance (Carty 1988:33) and music (Bilby 1983:1; Tanna and Ramsay 1987:27- 29)

All of these elements are integrated into the *benta*'s social context, an African-Jamaican wake cycle known as the *dinki mini*. Like the post-mortem celebration itself, the term *dinki mini* is an African-derived expression, in this instance a creolization of the Ki-Kongo term *ndingi*, meaning, "lamentation, funeral song" (Cassidy and LePage 1980:53). The *dinki mini* is directed by cosmological beliefs originating in the Kongo/Angolan area, especially the veneration of ancestral spirits, known as *kuyu* in Kongo-Jamaican creole (Lewis 1977:70). As in the Kongo/Angolan region, the Bongo people of East Jamaica maintain a strong belief in the interrelation of the living and the dead in a reciprocal universe of birth, death, and eventual return. Encoded in the choreography of the *dinki mini*, this cosmology is expressed kinetically as the dancers move in a counter clockwise direction, tracing the path of the departed soul's journey to *mpemba*, the world of the ancestors. African-Jamaican wakes will often last for well over a week, hence their most popular isand designation, the *nine night*. During the course of the *dinki mini* cycle, ring games, riddles, folk tales, music and dance become a cathartic matrix, assuaging the mourners in a spiritual celebration of renewal. The traditional songs of the *dinki mini* are sung in an African call and response pattern, and feature many *Ki-Kongo* words. The continued vitality of such Bantu languages as *Ki-Kongo* and *Ki-Mbundu* (Zones H and R in Guthrie 1967:51,64) in Jamaica are quite noteworthy, and recent linguistic fieldwork on the island has yielded a lexicon of some 272 extant items (Carter 1986:3).

However, the term used for the idiochord zither played in the *dinki mini* wake, *benta*, is a *Twi* word originally used by the *Ashanti* to designate a mouth bow they played in Ghana (Bowdich 1819/1966:362-363). The *benta* mouth bow came to Jamaica with *Ashanti* slaves in the late eighteenth century, where the expatriate Englishman William Beckford noted it in his island travelogue



Top drawing: Three-player benta from St. Mary Parish in East Jamaica.
Courtesy Ivy Baxter.

Bottom drawing: Three player carangano from Curiepe, Venezuela.
Courtesy Juan Liscano.

(Beckford 1790 I:216). Just when this *Twi* word was projected onto the Kongo/Angolan glissed zither in Jamaica is at present unknown, although it does fit a cultural patterning in the African Diaspora. During the creolization process, as the African lexicon erodes, terms that were formerly quite specific in African languages are projected across semantic lines to describe new ideas and artifacts. (Kubik 1979:37). The term *benta* seems to have become one such generic African tag in the New World, its semantic field increasing in Surinam to include a number of musical instruments such as lamellophones and pluriarcs (Price and Price 1980: 182), in Jamaica to designate the idiochord zither.

This linguistic projection may have been facilitated by the early appearance of a multiple string glissed musical bow in Jamaica. According to Peter Marsden, this instrument was also associated with an African-Jamaican funerary context (Marsden 1788:33-34), quite possibly the eighteenth century antecedent of the *dinki mini*. Although this musical bow is now extinct in Jamaica, similar multiple player glissed bows are still found in Angola (Kubik 1970:27), Brazil, and Venezuela (Graham 1991:10).

During her Jamaican fieldwork in the 1920's, folklorist Martha Warren Beckwith had an informant named Valentine who described for her a multiple player glissed zither played by the *Maroons* (Beckwith 1929/1969:194), another African cluster group living on the island. This *Maroon* glissed zither, like so many other variants of this trans-Atlantic organological complex, utilized components of western technology in its construction (Graham 1991:10). In such examples the ancestral African model serves as a cultural templet, providing a springboard for innovative organological changes as individual instrument builders seek both to improve and personalize their designs, a cultural process which I have discussed at length in a previous E.M.I. article (Graham 1992:30).

The *benta*'s contemporary distribution in East Jamaica seems to be associated with the mid-nineteenth century migration of Kongo/Angolan indentured laborers, although African-derived glissed chordophones were clearly present on the island earlier as a consequence of the slave trade. One result of this secondary proliferation of African culture-bearers was a more orthodox approach to *benta* construction, for most contemporary models are idiochord zithers nearly identical to traditional African examples.

The most dynamic changes are found in the *benta*'s Jamaican cultural context, for in Africa, the glissed zither was a secular instrument played almost exclusively by children. Just when the *benta* became an adult instrument played in a canonical context is at present unknown. In the cultural crucible of eighteenth century Jamaica, the African institutions exported with the slave trade were reinterpreted in pan-African terms as specific ethnic expressions blended into new syncretic forms relevant to the Caribbean experience. The consortium of African-derived elements in the *dinki mini* — the *benta*, the Bantu song texts, the choreography, the folk tales, call and response vocal patterns, and most importantly, its theological orientation, were all culled from the Jamaican collective memory and reorganized to create a Caribbean cultural institution. Despite a pronounced African cultural background, the *dinki mini* is completely innovative in its current synthesis of these disparate elements. The antiquated notion that the *dinki mini* or the *benta* represent organic African "survivals" suggests a cultural inertia which is nonexistent in Jamaica.

In fact, the *benta* has now come full circle in Jamaica, moving through series of organological changes as successive generations have experimented with the African cultural templet,

producing designs that were relevant to their social experiences, returning to more traditional models with the influx of Kongo/Angolan laborers in the mid-nineteenth century. Both the Jamaican academy and the Rastafarian religion have renewed island interest in African-Jamaican culture, encouraging the propagation of traditional expressions such as the *dinki mini*. Today such traditional ensembles as the Roadside Dinki Mini and revival groups like the Islington Secondary School Dinki Mini have perpetuated this East Jamaican cultural institution, and it seems the African ancestors will continue to be honored as the *benta* remains a musical force on the island.

I would like to thank the following people for their invaluable assistance: Ivy Baxter, David Evans, Bart Hopkin, Gerhard Kubik, Wyatt MacGalley, and Rex Nettleford.

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REPORT FROM THE CLOUD EIGHT ARCHIVE OF MUSICAL INSTRUMENTS AND FORTEAN MUSICOLOGY

The Cloud Eight Archive of Musical Instruments and Fortean Musicology (founded in Chicago, Illinois in 1989) has recently begun the major undertaking of cataloging its entire collection, probing the hidden corners of a vast storehouse. In frustrated attempts to identify many previously unclassifiable holdings, the Archive has turned to guitarist/musicologist Davey Williams to aid in documenting these unique musical instruments. The initial results of Mr. Williams' investigations are published here for the first time. Mr. Rammel's accompanying illustrations draw on a variety of old photographs and advertising images to recreate possible performance techniques developed for these obscure sound devices.

Text by Davey Williams

Illustrations by Hal Rammel

FIGURE 1 (right): This object appears to originate in 19th century London, as indicated by a date and maker's mark on the bucket-shaped resonator. While its musical functioning is unmistakable, its purpose is completely unknown. Obviously, the geared turn-crank at the top causes the heavily-rosined string to rotate. Contact with the spoon against various points on the string results in a variety of different pitches to be sounded, resonated by the inverted bucket. Additionally, a candle was used to heat the rosined string (not light it) in cold weather, since the resonator is solid across the top. The function of the clock in the performer's hand is uncertain but may relate to the length of time spent heating the resonator and string with the candle. Also, evidently, the rosined string was much longer than the illustration indicated, perhaps even suspended from a high window, extending perhaps several meters. A possible clue to the use of the device may appear in this contemporary letter from a child on holiday to the city, writing to his mother in the country. "I awoke before dawn to an odd whistling sound outside my window, and a string hanging down from Auntie's window upstairs. Shortly, the front door opened and someone — two people — went quietly upstairs, whereupon I heard a strange rhythmic sort of commotion coming from Auntie's room above me until I fell back to sleep."

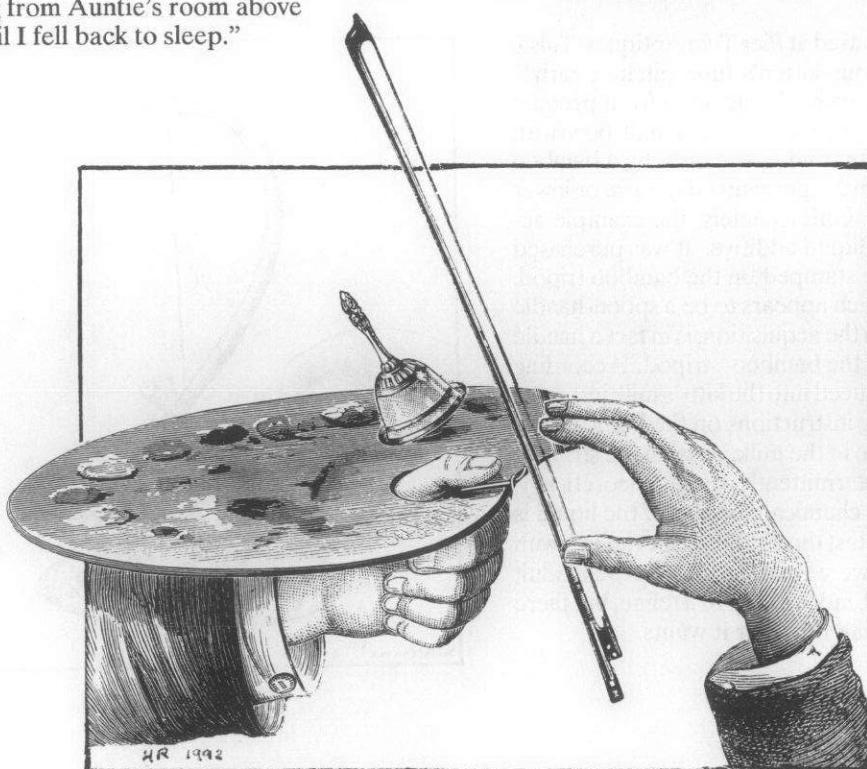
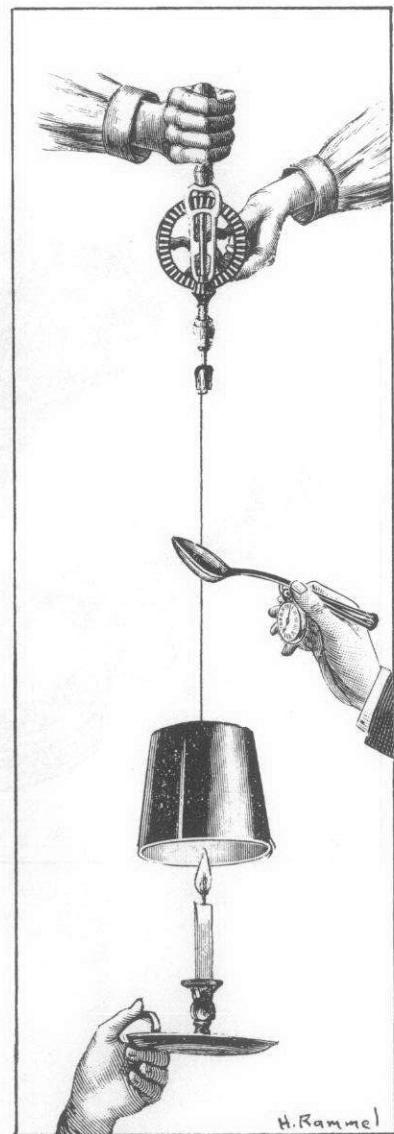


FIGURE 2 (left): This charlatan instrument, date unknown, claimed to be a sonic paint mixing device, but experimentation with the model in possession at Cloud Eight reveals that, while it makes interesting sounds, it fails to affect the colors on the palette in any perceptible way whatsoever after 48 hours of continuous bowing. The bell-like shape affixed to the palette is made of extremely thin brass and responds to vibrations passing through the wooded palette with a variety of delicate ringing tones, changing as the paints dry onto the palette.

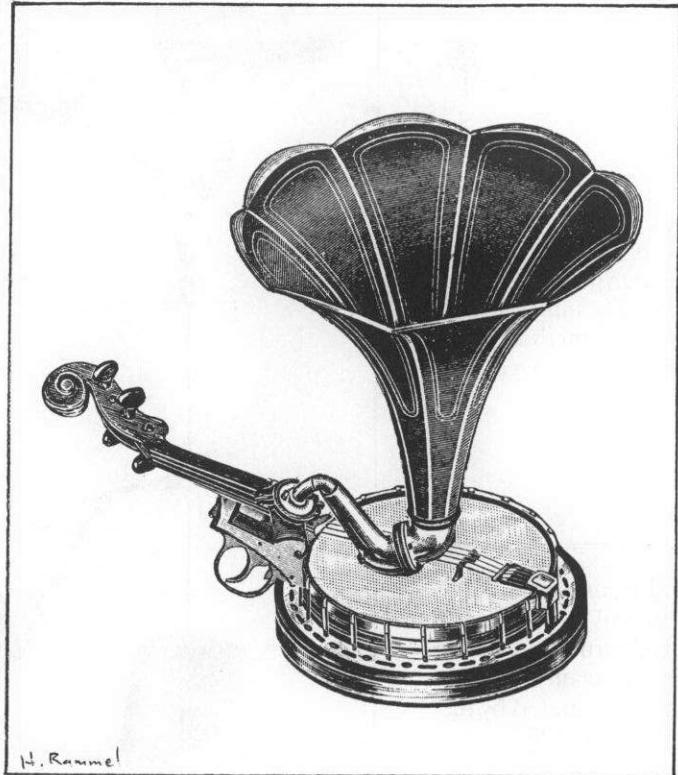
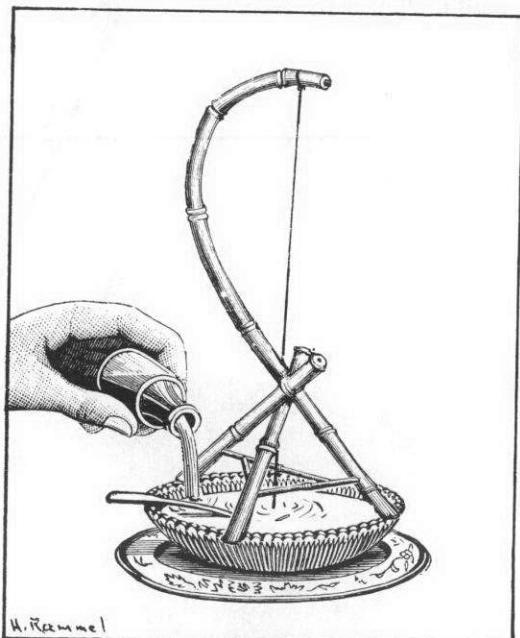


FIGURE 3 (left): This device was manufactured in the early 1920s by the Fischblatt firm, an Austrian arms manufacturer. With firearms sales forbidden, except for hunter's shotguns, this company came up with the ingenious plan to convert their then-outlawed pistol factory to the production of the Fischblatt Musical Hunter's Animal Startling Device, based on a dubiously researched theory that prey, especially fowl, could be startled in predictable directions with certain note combinations issued as a loud report. Thus, the hunter pointed the device in the direction of suspected prey and pulled the trigger. This released a spring-steel hammer to strike across the special heavy-duty string of the banjo with terrific force, causing the banjo's resonator plate to emit a loud harmonic snap. The notes were aimed at the quarry with the Victrola-like bell. Tuning was possible through adjustments to the violin pegs. In the firm's short career only a few of the devices were actually sold. Despite wide advertising, the company folded. Herr Fischblatt, according to a relative, never hunted.

FIGURE 4 (right): This device was originally purchased at Pier Two Antiques, Tulsa, OK in 1990. It had been advertised: "Get your kitten's tune pitched early!" Evidently, this company, Acme Feline, Ltd., perceived a demand for a product designed to make kittens mew in different pitches by using a special milk bowl with a traditional viola string held in tension to the bottom of the bowl by a bamboo tripod construction. A liquid was added to the milk "guaranteed to raise or lower your cat's voice," according to the directions. Unfortunately, the example acquired by Cloud Eight was missing the musical liquid additive. It was purchased some thirty years after the date of manufacture stamped on the bamboo tripod. Of particular interest, however, is the object which appears to be a spoon-handle in the illustration. This object, still included with the acquisition, is in fact a handle for a pulley device which controls the tension of the bamboo tripod. According to the advertisement, the liquid additive is introduced into the kitty's milk just prior to the cat's drinking (in amounts determined by instructions on the bottle). The string is excited by the motion of the cat's tongue in the milk, causing the string to vibrate in a type of mewing sound, somewhat intermittently, which, theoretically, the kitten was influenced to emulate. Since the chemical makeup of the liquid is unknown, it has proven impossible to accurately test the device. Experiments with a combination of apple cider and lemon juice were found attractive to an adult cat, by which the string made a marvelous sound, indeed akin to a feline, but there was no evidence that cat mews any other way than however it wants.



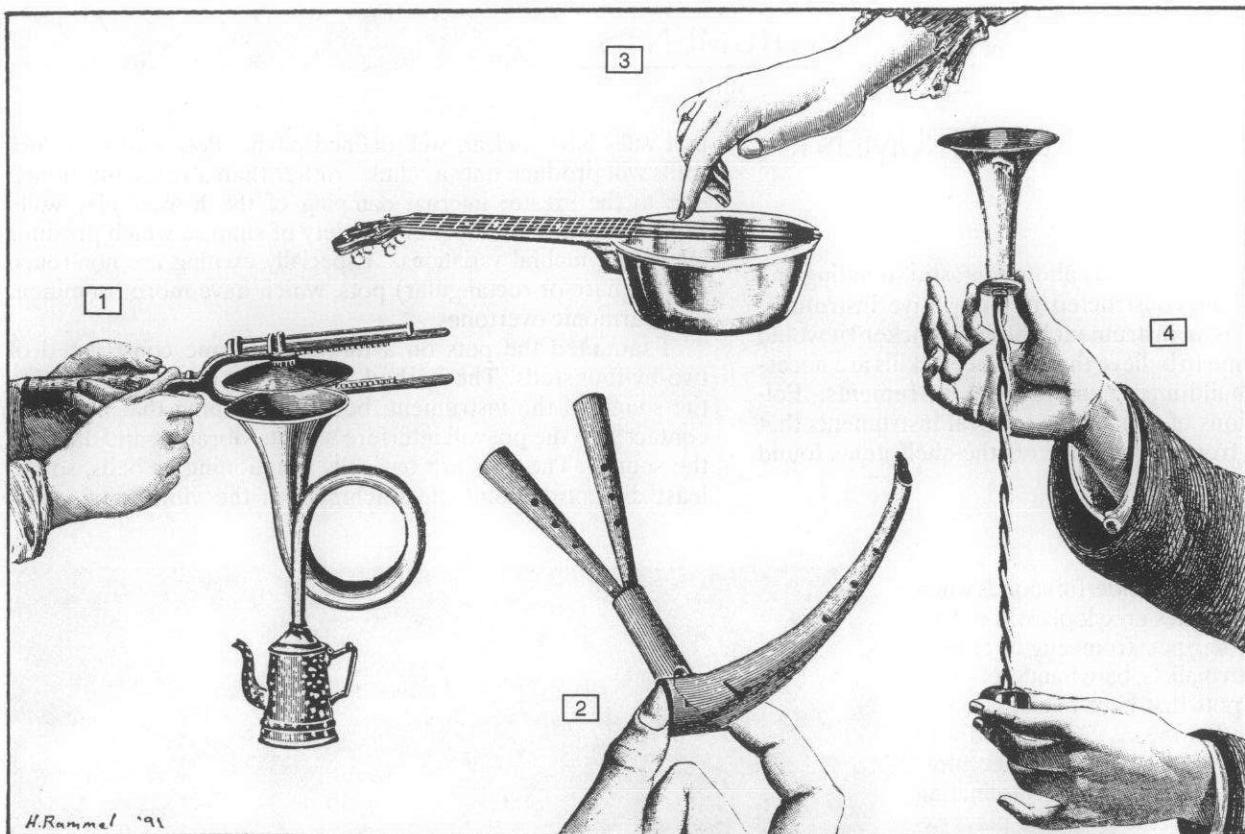


FIGURE 5 (above):

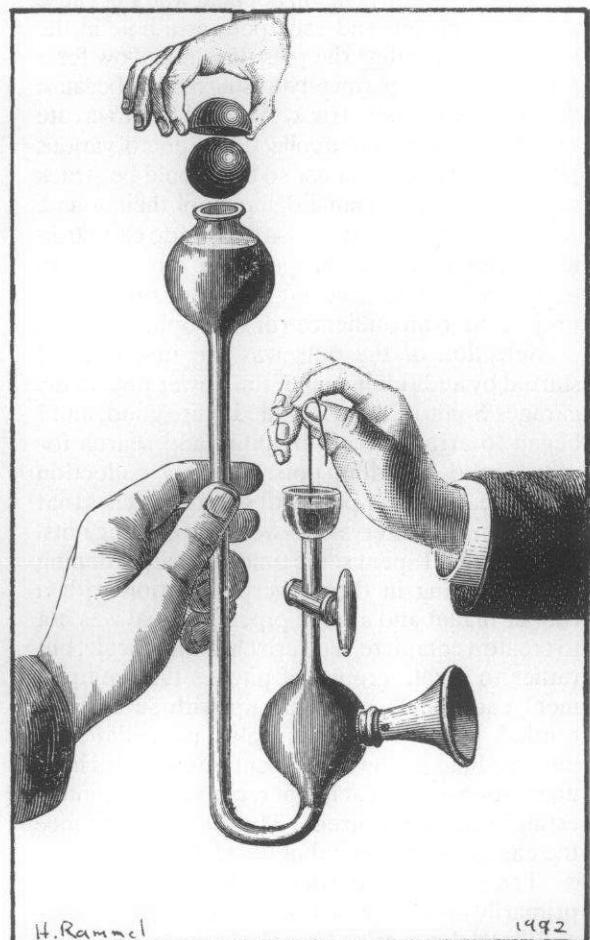
#1: Coffeepot-powered trumpet mute calibrator, for the exacting jazz student, ca. 1935. In this device, steam from the coffee percolates through the metal embrasure, providing an even sustained tone for the bugle, enabling focused practice with calibrated mute.

#2: Bovine intra-uterine whistle, Mayan, ca. 400 B.C.

#3: Liquid plectra toilet ukelele chamberpot, ca. 1893

#4: Radio sound effects device for amplifying the sound of wet clothes being wrung out, ca. 1931.

FIGURE 6 (right): This illustration is taken from a photograph of the Limetti Brothers performing at a private party with one of their inventions, the Limetti Brothers' Drink-mixing Hydraulic Harmonicum, designed for two players and one assistant. As shown in the original photo, a party guest was asked to hold the instrument as the brothers exercised their singular skill and coordination in manipulating their controls for the device to produce melodies, to the delight of guests, also evident in the original photo. Despite its musical charms, the chief purpose of the Hydraulic Harmonicum was the careful mixing of a number of delicate liquors in a drink of the Limetti Brothers own devising, whose recipe is now sadly lost. Mechanically, the instrument was simple. By means of a sticky half-dome-shaped ball and a sticky sphere beneath it, the player was able to cut off the flow of air intake, thereby controlling the rhythm of the song being played. The second player used the weighted device on the string to control the rapidity of liquid intake into the harmonicum mechanism, a simple harmonica with reeds excited by the liquid passing over them. The song played was controlled generally by the valve and specifically by the string-and-weight, all the while gently mixing their closely guarded drink recipe. The original photo attests to a good time had by all, but no trace of the instrument itself remains.



TWO HARDWARE STORE INSTRUMENTS

By Barry Hall

I enjoy reading articles in EMI about fantastic sounding and great looking creations constructed by innovative instrument builders. However, as an instrument building "hacker" it would be discouraging for me to believe that advanced skills are necessary to create and build interesting musical instruments. Following are descriptions of two simple musical instruments that can be constructed from inexpensive off-the-shelf items found in a hardware store.

FLOWER POT-O-PHONE

Some clay pots produce wonderful sounds when struck. Simple wind chimes or xylophones can be assembled by suspending pots from lengths of rope and striking them with mallets, bare hands, or other hanging pots. Clay pots that have been glazed or made watertight by other means can be filled with water to vary their pitches and produce other interesting effects. Stephen Micus has a fascinating recording on the ECM label in which he plays extensive sets of clay pots tuned with water.

I set out to create an instrument that could be made with inexpensive garden-variety terra cotta flowerpots. These pots will not hold water because the clay is porous and each pot has a hole in the bottom. Suspending the pots does not allow for a precise rhythmic playing style using mallets because the pots swing when struck. My goal was to create a method for mounting a collection of pots of various pitches in a stable manner so they could be struck repeatedly, with minimal damping of their sound. Another design objective was to provide easy striking access to all of the pots, for one or more performers, while achieving maximum directional projection to an audience (or microphone).

Selection of the pots was the first task. I started by auditioning all of the flower pots in my garage. Some of them sounded quite good, and I began to arrange them by pitch and search for more good-sounding pots. As my collection grew, I searched for pots with specific pitches that would fit in the intervals between the existing pots. At this point, I spent some time in local gardening stores, lurking in the flowerpot section with a rubber mallet and a pitch pipe. My goal was not to create a complete Western chromatic scale, but rather to create groups of pitches that complement each other. I ended up with several extended pentatonic scales plus miscellaneous intermediate pitches. The pentatonic scales have no relationship to each other, but are quite interesting when intermixed. These scales enhance the earthy, ethnic sound of the clay pots.

The pitch of a particular flowerpot is based primarily on a combination of the pot's diameter and the thickness of its clay walls. In general, pots with

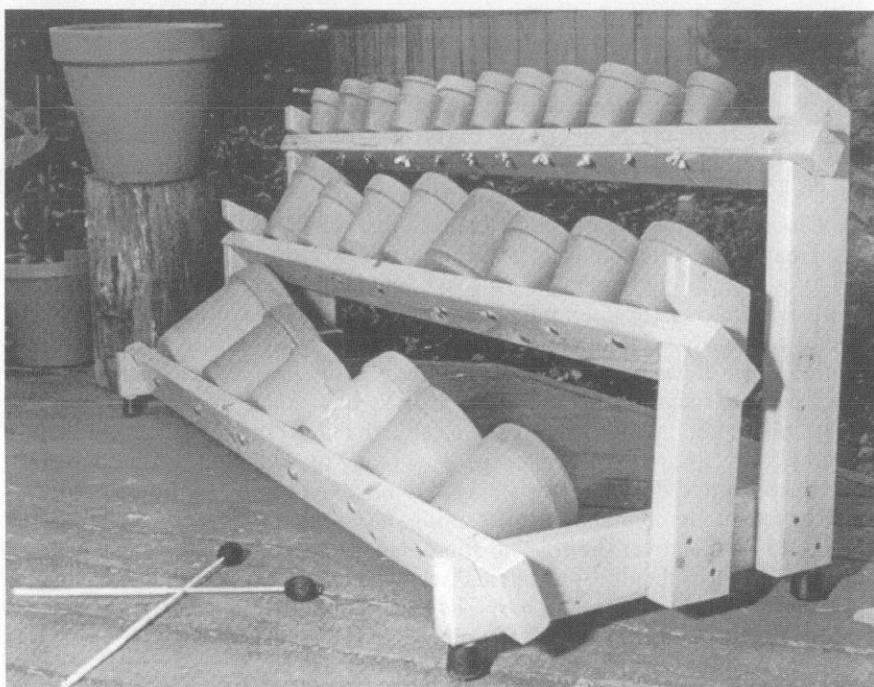
thin walls have a clear, well defined pitch. Pots with very thick walls will produce only a "clink," rather than a resonant "bong," due to the greater internal damping of the heavier clay walls. Flowerpots are available in a variety of shapes, which produce interesting timbral variations. Especially exciting are non-round (e.g., square or rectangular) pots, which have more prominent non-harmonic overtones.

I mounted the pots on a three tier frame constructed of two-by-four studs. The method of mounting the pot is critical to the sound of the instrument, because anything that comes in contact with the pot will interfere with its vibration and dampen the sound. The pots are basically functioning as bells, so the least disruptive point of attachment is the vibrational node,

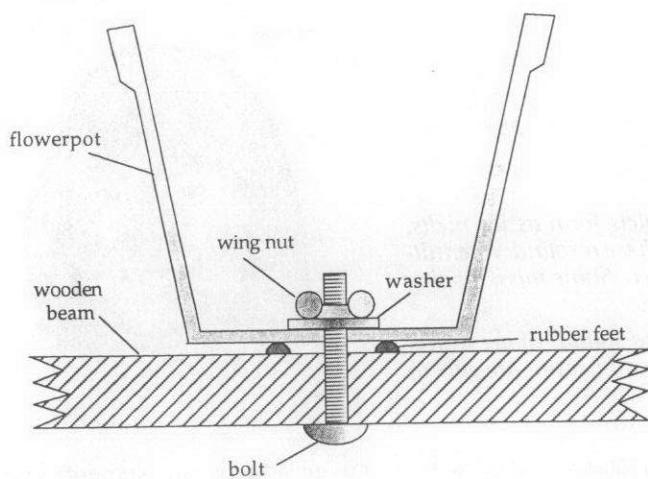


Above and below: Flower Pot-o-phone.

Photos by Barry Hall



Cross section showing method of attaching flowerpots to wooden beam



which is at the center of the bottom of the pot (where the drainage hole is). Theoretically, minimum damping would be achieved by suspending each pot from a rope attached to its vibrational node. I opted to attach the pots to the beam by passing a bolt through a hole drilled through the wooden beam and then through the hole in the bottom of the pot, where it is secured with a washer and a wing nut (see diagram). Minimum contact with the wooden beam is achieved by resting each pot on three small rubber feet attached to the beam. (A good source for these rubber feet is Radio Shack.)

Different types of mallets can be used to produce a variety of sounds from the instrument. The most successful are rubber or yarn xylophone or marimba mallets. Superball mallets also work exceptionally well. (See Feb. 1990 EMI article on superball mallets.) The larger pots respond well to softer mallets, while the smaller pots require harder mallets in order to "speak."

Another fun design for this instrument would be to arrange the pots in such a way that two players could face each other with the instrument between them, providing both players striking access to all of the pots without interfering with each other.

WASHER CHIMES

I have a peculiar fondness for items that can be bought in bulk. When my local hardware store started selling metal washers of various sizes by the pound, I decided it was time to figure out an excuse to start buying them! In this case, it was quite easy once I discovered that the washers, when struck with a hard object, produce a beautiful high tone with a very long sustain. Their sound is very similar to the Tibetan *tingsha* cymbals, though the washers do not sustain as long. However, unlike the *tingsha*, even the very largest washers cost only ten cents each!

The first set of chimes I constructed utilizes eleven washers. The largest is 9 cm. in diameter and 5 mm. thick, and the smallest is 3 cm. in diameter and 2 mm. thick. Coincidentally, each washer has a pitch about a semitone higher than the next larger size (a fact discovered during considerable in-store experimentation!)

I drilled a small hole near the top of each washer and suspended it from a wooden bar with thin brass wire. I passed the wire through holes drilled in the wooden bar at one inch intervals and wrapped the end of each wire around small screws set into the top of the

bar. A larger hole drilled through the middle of the bar at the balance point allowed it to be mounted on a stand.

Once assembled, the instrument sounded great! With a brush of my hand, the washers collided with each other and produced a delightful sustained cacophony of tinkling. However, I soon realized that although starting the instrument was quite easy, it was almost impossible to stop it!

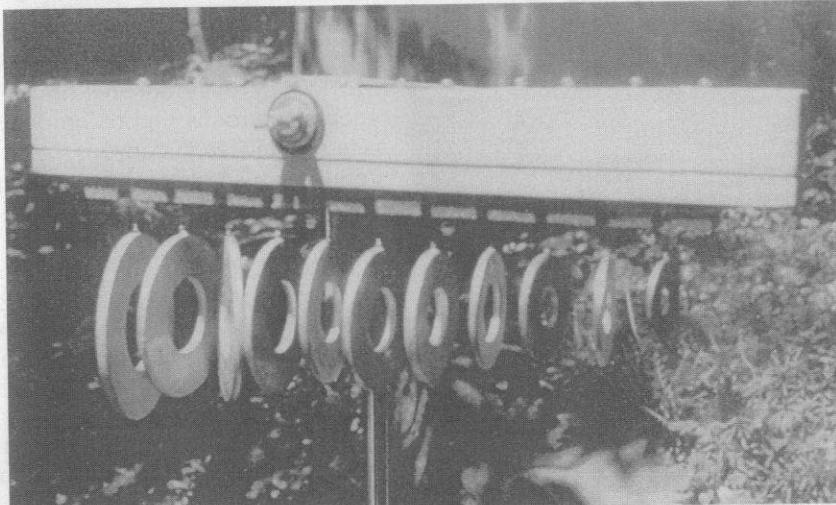
My solution to this challenge was a wooden "muting bar" with attached strips of foam. The foam is an insulating strip designed for doors and windows, which comes in a roll and has an adhesive backing. The muting bar slides freely up and down the wires from which the washers are suspended. The wires pass through holes drilled in the bar. When the muting bar is dropped into its lower, or muting position, the pieces of foam separate the washers and restrict their horizontal and spinning motions. When the bar is raised to its upper position, each washer's motion is unrestricted. The muting bar is gently held in the upper position by small magnets embedded into both wooden bars. This allows the performer to easily drop or raise the muting bar during performance.

One difference between the washer chime and common bar chimes, which are made of small tuned metal bars, is that washers, due to their spinning, will continue to collide with each other and produce sound long after bars would have stopped. In addition, the washer chime produces interesting polyrhythmic effects as the washers collide, since each washer spins at its own individual speed determined by its size and weight.

If you intend to build your own washer chime, consider placing the smaller washers closer together than the larger washers. This will produce a more even distribution of pitches as the washers come to rest. In my monospaced model the larger washers, due to their greater diameter, continue to bump into each other long after the smaller washers have stopped.

Washer Chimes.

Photo by Barry Hall



WHAT ELSE?

The above two instruments are simple idiophones built from common items. Hardware stores are a bonanza of items which can be put to use creating simple or complex musical instruments. The plumbing section, for example, beckons with a wealth of components for building aerophones. So the next time you run to the store to pick up something, I invite you to take a few extra minutes to wander down the aisles for inspiration, and use your imagination!

ENVIRONMENT AND PROCESS

by Marlin Halverson

She inverts and suspends a pyramidal cone of pebbles and ice. Droplets form as ice melts. Silence is broken as water and pebbles fall, striking reeds and wires. These resound. Intermittent melodies form by chance as gravity summons pebbles to a pool of water. Some miss, tapping the floor. Environment and process: change in progress....

Audiences depart, their senses heightened. They remember the images and sounds of her world. Her personal vision, her Japanese heritage, her presence in this country, and her art are gifts to our era.

This article is condensed from Environment and Process: A Retrospective of Works by Mineko Grimmer, exhibition catalog for Mineko Grimmer's exhibit in the Main Gallery at the Fox Fine Arts Center, University of Texas at El Paso, January 21 through February 19, 1993, curated by Marlin Halverson. The exhibition included a performance of John Cage's ONE⁶ by violinist Alan McChesney, a slide presentation by Mineko Grimmer, and the first retrospective catalog of the artist's works.

The complete catalog, containing 28 photographs of Mineko Grimmer's works, as well as biographical information, is available for \$5.00 plus \$3.00 shipping and handling. Checks should be addressed to the Fox Fine Art Galleries at the following address: Department of Art, University of Texas at El Paso, El Paso, TX 79968.]

Artist, Mineko (Watanabe) Grimmer was born in Hanamaki. She studied at Iwate University, Morioka, Japan, and at the Otis Art Institute of the Parsons School of Design in Los Angeles, California. As an artist she experimented with a variety of media and materials to express her ideas of change and process, themes which are central to her work. Soon, she found an adhesive material that could portray a continual process in art: ice.

... I began to freeze water into various tetrahedrons and other geometric forms. I photographed the ice as it melted in canyons, beaches, and in parking lots. While taking the photographs, I thought that maybe I could try embedding something into the ice. I started by freezing pebbles into cubes, tetrahedrons, cylinders, and spheres. No matter what shape the ice had when it began, the remaining materials would always form a low cone.

I found sound accidentally. As the ice melted on the sidewalk or on a concrete base, when pebbles fell from the ice and hit, they would make interesting sounds like TAI-TAI-TA-Ta-ta, as they bounced. This is because pebbles have so much density. From this discovery, I moved on to use sound as part of the sculpture.

Untitled (not pictured), from 1980, was my first sculpture to utilize

Left — Photo #1: ROCK MUSIC. Los Angeles Visual Arts Annual, 1981 Japanese American Cultural Community Center.



sounds from ice melting as an element. The sculpture consisted of eight melting tetrahedrons of ice, suspended at different heights. Each of the tetrahedrons contained crushed rock. Four were white and four were black. The rock was crushed from large stones and was coarser than the smooth small pebbles I usually use now. The stones and melting ice fell upon bamboo before settling in a water basin made from a large plastic sheet.

I first suspended ice and pebbles over a structure in a public exhibition with Rock Music (photo #1). As the ice melted, pebbles dropped onto a diagonal bamboo structure creating sounds, movement, and action. The work became kinetic, part sculpture, and part performance.

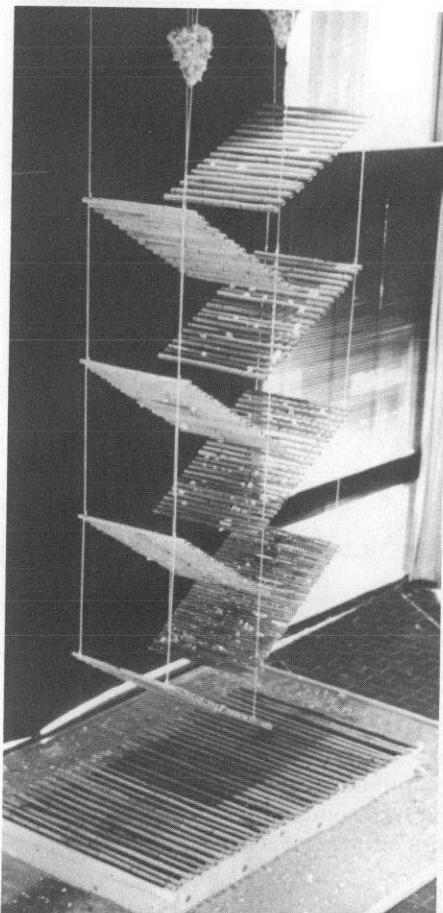
My very first musical collaboration was with composer, Carl Stone. He composed and performed music with Audible Sculpture at the Oranges/Sardines Gallery, in Los Angeles (photo #2). He manipulated samples of sound from my sculpture by feeding it through a synthesizer. The processed sounds were released back to the audience in a live performance. The result was a duet.

Art critic, Marina LaPalma, who witnessed the performance, wrote the following:

The pebbles dropped at unpredictable intervals as the ice melted, producing sounds as they hit hollow poles, then coming to rest in the pool forming below. Within the highly planned, symmetrical structure (pegged together elegantly with wood), the disorder of scattered pebbles and puddled water was precisely contained in its place....An arena for chance had been defined by the artist in the finest tradition of both her own Japanese culture and post-Cage process art in America.

As the stones fell, the sounds they made were amplified by a microphone, mixed with other "concrete" sounds on tapes and processed through tape delays and a harmonizer by Carl Stone, thus incorporating the audible sculpture into a real-time composition....The strength of the performances was rooted in risk.

Several audience members realized only afterward that the pinging sounds had come



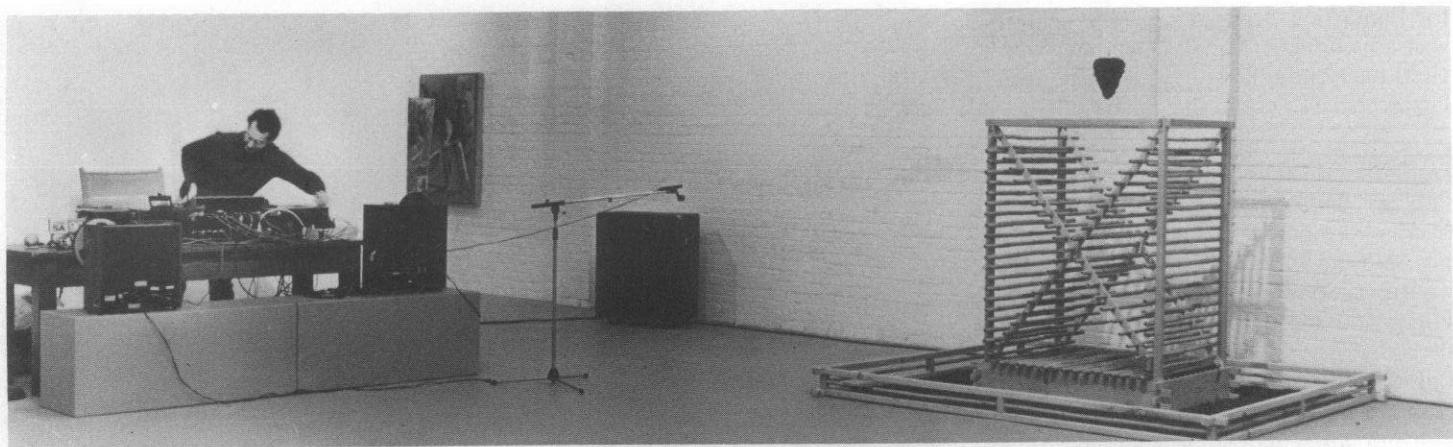


Photo #2: PERFORMANCE COLLABORATION, Sound Composer/Audible Sculpture. 1983 Oranges /Sardines Gallery, Los Angeles.

from the stones dropping through the bamboo structure, that the stones fell because the ice they were embedded in was melting at a steady rate, that gravity was a specific component in this process, and that the water sounds they heard were not from the rain on the roof, but from four speakers set in the corners of the large space. (ARTWEEK, March 26, 1983, p. 6)

Richard Turner, the gallery director at Chapman College, invited Mineko Grimmer to produce her first solo site-specific installation at the Chapman College Guggenheim Art Gallery (photo #3). He gave her full reign over the use of the gallery space. Carefully, she considered the whole spatial environment. The acoustical qualities of the space suggested Sound and Silence because of its ambiance.

While walking into the gallery space I immediately noticed its reflective acoustics. The space suggested the elements of my installation. Richard Turner was very understanding and did not mind if pebbles fell freely onto the concrete floor.

By using piano wire in a non-traditional manner, a new element was introduced to my work. This was the first time I used piano wire as a sound source. Eight different pitches were selected, tuned without reference to any conventional system of music.

The piece was named Sound and Silence because I wanted to point out that the silences were as important as the sounds. I felt that this had been overlooked and that such a title was more needed than one which was physically descriptive of the work.

The inherent properties of the gallery environment animated the installation. A cord connected to the ceiling suspended a pyramid of ice and black pebbles. The room's temperature melted the ice. Gravity drew water droplets and pebbles downward through the body of the composition, whose interconnected bamboo shafts stood eight feet high. Each material was chosen for the quality of its sound when struck by falling pebbles on their journey to the floor.

The silence of the gallery was broken as the radial arrangement of the sculpture deflected the falling pebbles. Some of the pebbles formed a randomly circuitous pattern as they continued to bounce on the hard concrete floor. Reflecting from the walls, the sounds of the sculpture defined the interior gallery space.

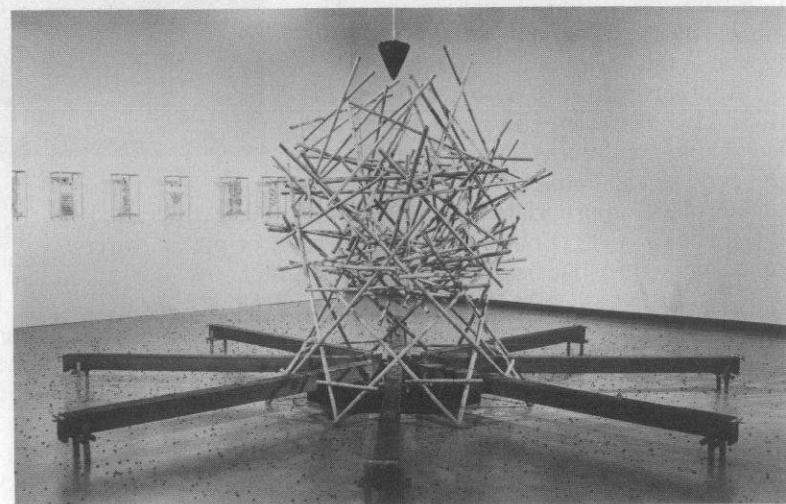
Eight piano wires of indeterminate pitch were stretched across eight redwood boxes and arranged in a radial pattern. An octagonal water basin received the dripping water and some of the pebbles. The gallery floor received the rest of the pebbles which bounced unpredictably before coming to a final stop.

Many of my compositions are now made so that they can be put together easily and taken apart. This is so they can be sent to exhibitions and others can put them together with my instructions. *Four Verses Set to Music* (Photo #4) traveled to the Grand Rapids Art Museum, Michigan in 1986, and to many galleries in New England.

The upper layers of the composition consisted of four sets of 16 bamboo poles, nine feet in length. Juxtaposed on opposite sides of the two upper layers were two parallel sets of the bamboo, extending three feet beyond opposite sides of the box frame that held them. An additional layer of heavier bamboo rested beneath the two upper layers. A bronze bar stood vertically in the center, above which hung an inverted pyramid of ice embedded with white pebbles.

Curator for the Los Angeles Municipal Art Gallery at Barnsdall Art Park, Josine Starrels, who usually elicited the best from artists, invited Mineko Grimmer to exhibit her work for the Magical Mystery Tour. Josine Starrels provided wide creative latitude and a whole room for Mineko Grimmer to use as she pleased.

Knowledge that hundreds of school aged children would be coming to see the exhibitions served as the main inspiration



Right – Photo #3: SOUND AND SILENCE. 1984 Chapman College Guggenheim Art Gallery, Orange, California.

for Fantastic Orchestra. The sculpture was so popular, Mineko Grimmer was invited back the following year and given a larger space to use in the gallery.

For my first Magical Mystery Tour, I created *Fantastic Orchestra* (Photo #5). Pebbles fell from the "conductor" in the middle, striking various instruments held by his "players," drums, strings, and gongs.

The second year I produced *Bamboo Forest* and *Seeking the Philosopher's Stone* (Photo #6). For *Bamboo Forest* over 100 bamboo poles were suspended from the high ceiling in the foreground. To reach *Seeking the Philosopher's Stone*, it was necessary to traverse the *Bamboo Forest*. As people walked forward, the bamboo poles clacked together. The idea for the *Bamboo Forest* comes from the opening lines of Dante's Inferno: "At the midpoint in the journey of our lives, I found myself lost in a dark forest...."

The theme and philosophy behind *Magical Mystery Tour* suggested using the ice, water, and stone in a medieval setting such as Dante's. The term "philosopher's stone" comes from the alchemists. They hoped to discover some substance which, when combined with base metals, such as lead, would yield gold. This mythical substance is the philosopher's stone. By extension, "philosopher's stone" signifies anything which lifts the ordinary to an unusual height.

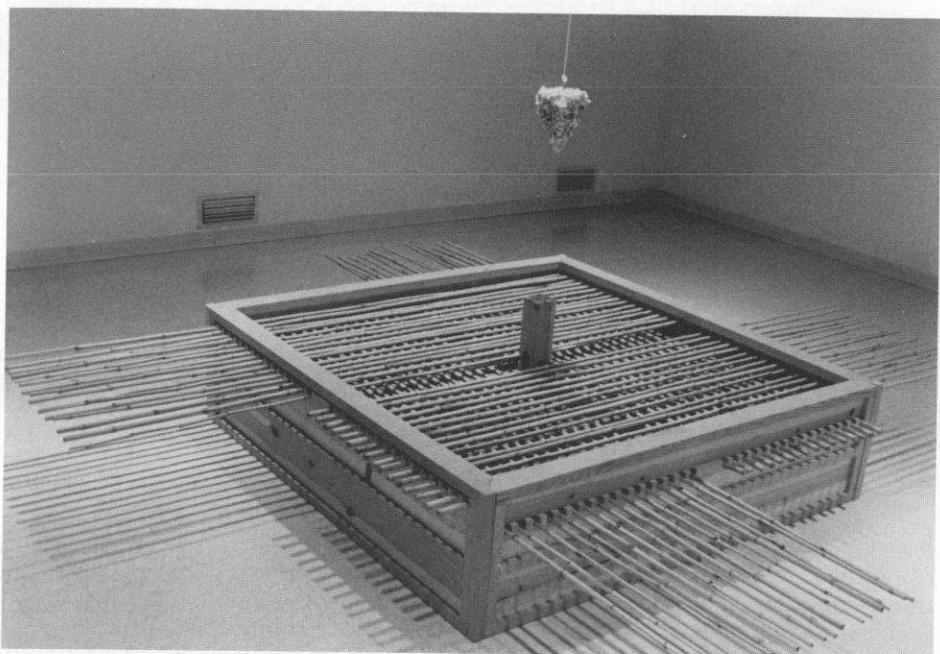
It was intended that people move and activate the *Bamboo Forest*, performing musical sounds as they walked forward, "seeking the philosopher's stone."

Mineko Grimmer is perhaps best known for her installation-scale ice sculptures. Many of these installations are based upon tiny inventions, called "maquettes" or "studies," which she began making in 1980. A new series of maquettes, which she started making in 1990, is based on imaginary primitive machines that could function from the action of melting ice. The *Single Wheel Mill Maquette* (Photo #7) is typical of this series of ice machines.

Another derivative of her 1980 inventions is a series of small functional ice/pebble sculptures. An example of this series is the *Padauk Music Box*, an intimate object appropriate for private houses. Perfectly crafted, the pebbles fall upon bamboo, metal bars, or guitar wires tuned with turn buckles, creating a small symphony.

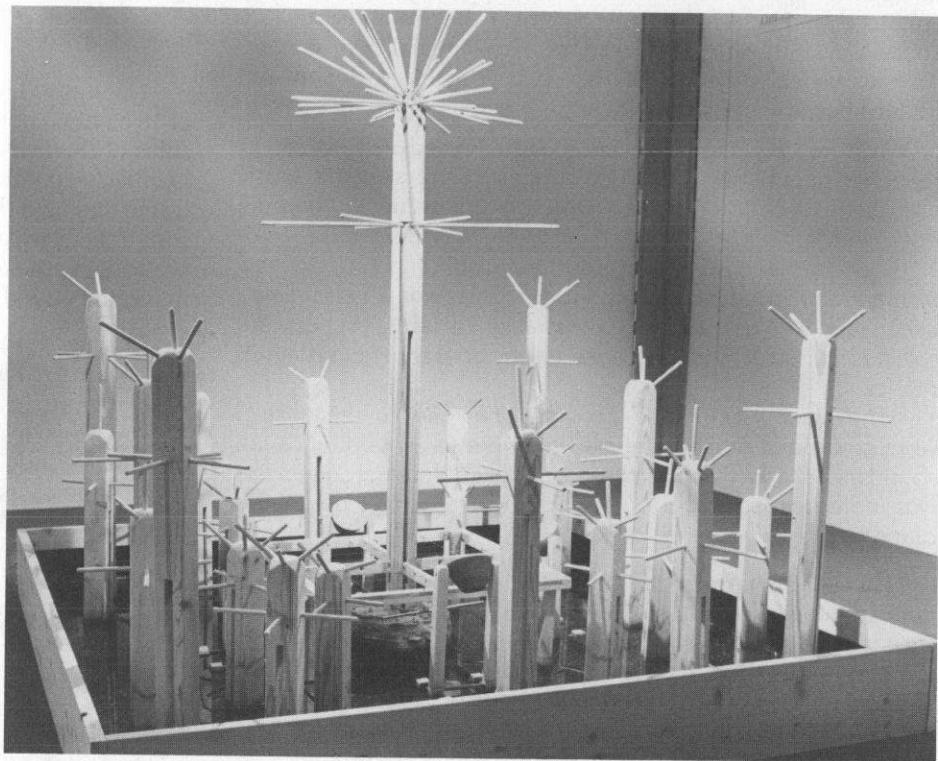
I was still in graduate school when I started making maquettes. These originally functioned as models for larger pieces. I titled them after different physical characteristics, such as *Stacked Tower*, and *Raindrops*. At times they were arranged on elaborate shelves, and displayed along with my larger installations.

What I had in mind with the ice machines was to picture some primitive processes or simple manufacturing equipment



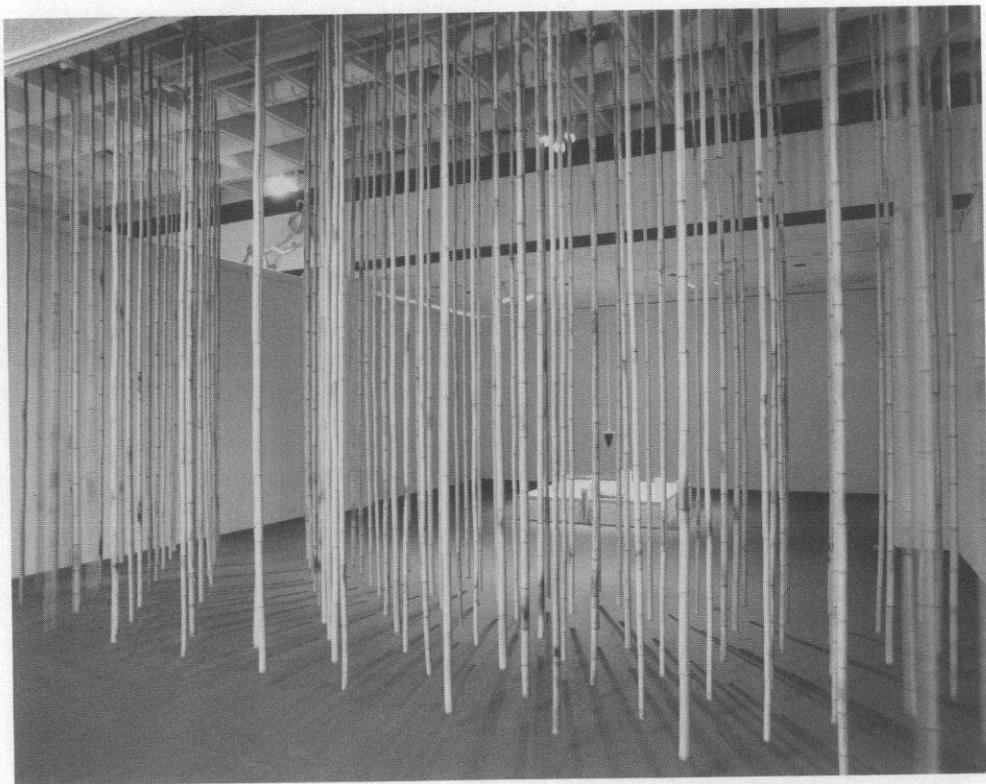
Above — Photo #4: FOUR VERSES SET TO MUSIC. 1984 Bruce Velick Gallery, San Francisco; 1986 Grand Rapids Art Museum, Grand Rapids Michigan.

Below — Photo #5: FANTASTIC ORCHESTRA. 1984 Los Angeles Municipal Art Gallery, Los Angeles; 1986 Santa Barbara Contemporary Arts Forum, Santa Barbara, California.



which could be powered by falling pebbles. This, of course, was meant as imaginary rather than realistic; and so these can be viewed as containing a touch of humor.

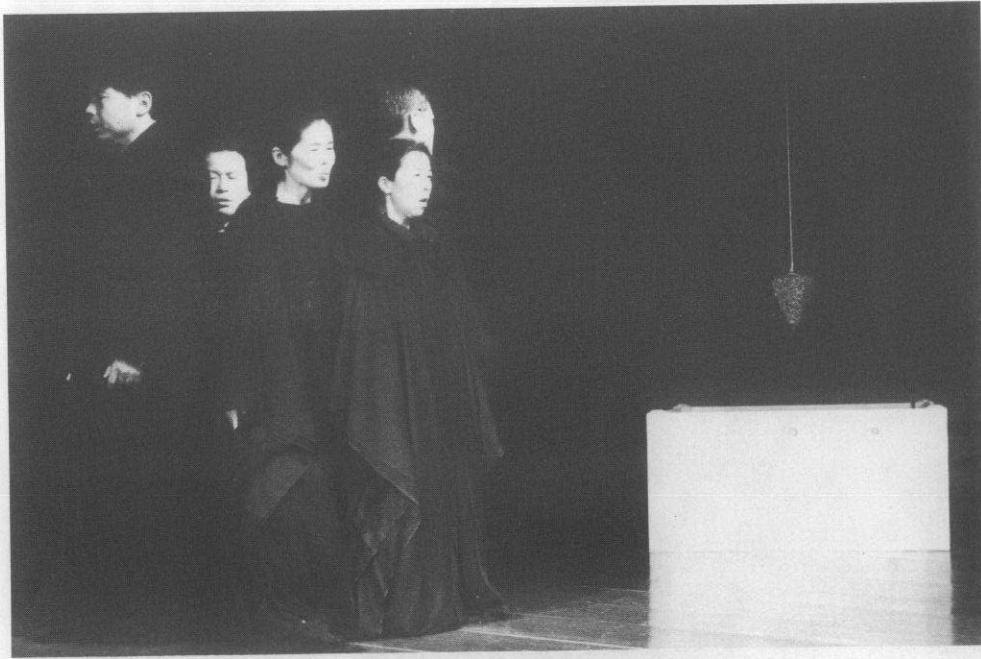
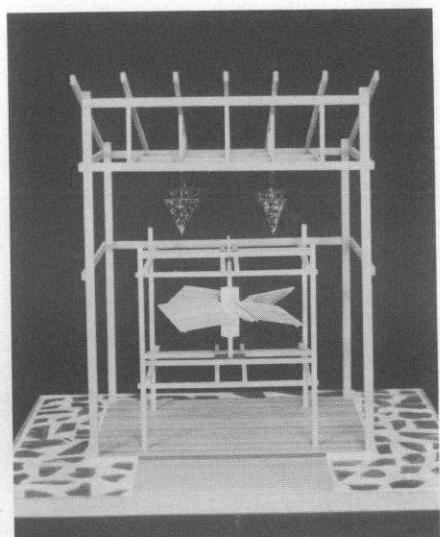
During 1990 I produced an installation for an international performance collaboration in Japan (Photo #8). This was a big challenge. Traditional and modern actors danced and chanted to computer music which was generated by the sounds of the sculpture. The actors were from the Renniku-Kobo modern Noh theater group, and the Sankonokai traditional Noh theater group.



Above — Photo #6: BAMBOO FOREST, with SEEKING THE PHILOSOPHER'S STONE visible behind. 1985 Los Angeles Municipal Art Gallery, Los Angeles; 1986 Santa Barbara Contemporary Arts Forum, Santa Barbara.

Above Right — Photo #7: SINGLE WHEEL MAQUETTE, 1990 Koplin Gallery, Santa Monica, California.

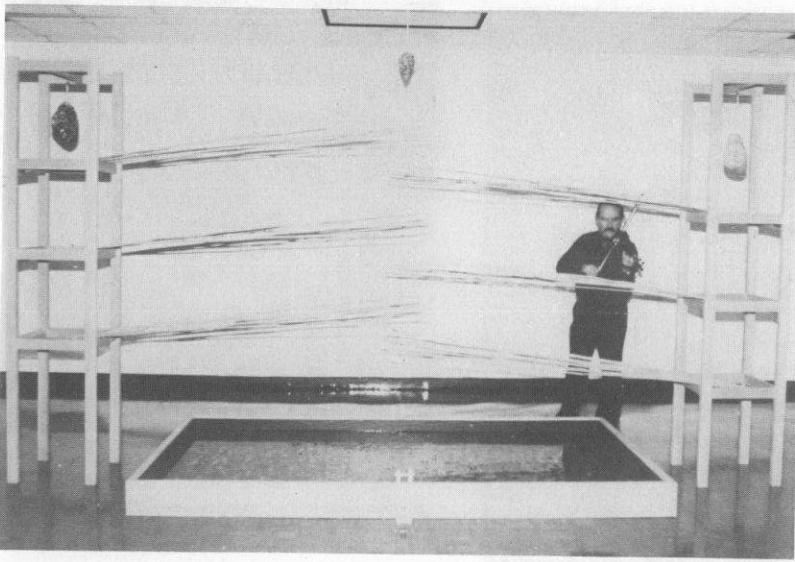
Below — Photo #8: WATER VOICE, INTERNATIONAL PERFORMANCE COLLABORATION. Renniku-Ko, Kobo Modern Noh Theater Group and Sankonokai Traditional Noh Theater Group, 1990 Tessen-Kai, Tokyo, Japan.



Technically, this was a difficult project. It was executed at a Noh theater, which is over 150 years old. The floors were wooden, made of a special cedar which grows in Japan and cannot be replaced because cedar trees of that size do not exist anymore. The floor is so valuable, it is a national treasure. For protection, the Noh Theater building is encased within a larger, cast concrete building, designed by Arata Isozaki.

he had written for my sculpture.

While at Stanford University, I asked him if he would write another composition that could be performed with my sculpture, and he said he would. Several weeks later I received his score. We planned to make a CD recording together of ONE⁶ and his new composition, ONE¹⁰. (The "ONE" denotes a solo perfor-



Left — Photo #9: PERFORMANCE OF ONE⁶. Written by John Cage; performed by Alan McChesney. 1993 University of Texas at El Paso, Main Gallery.

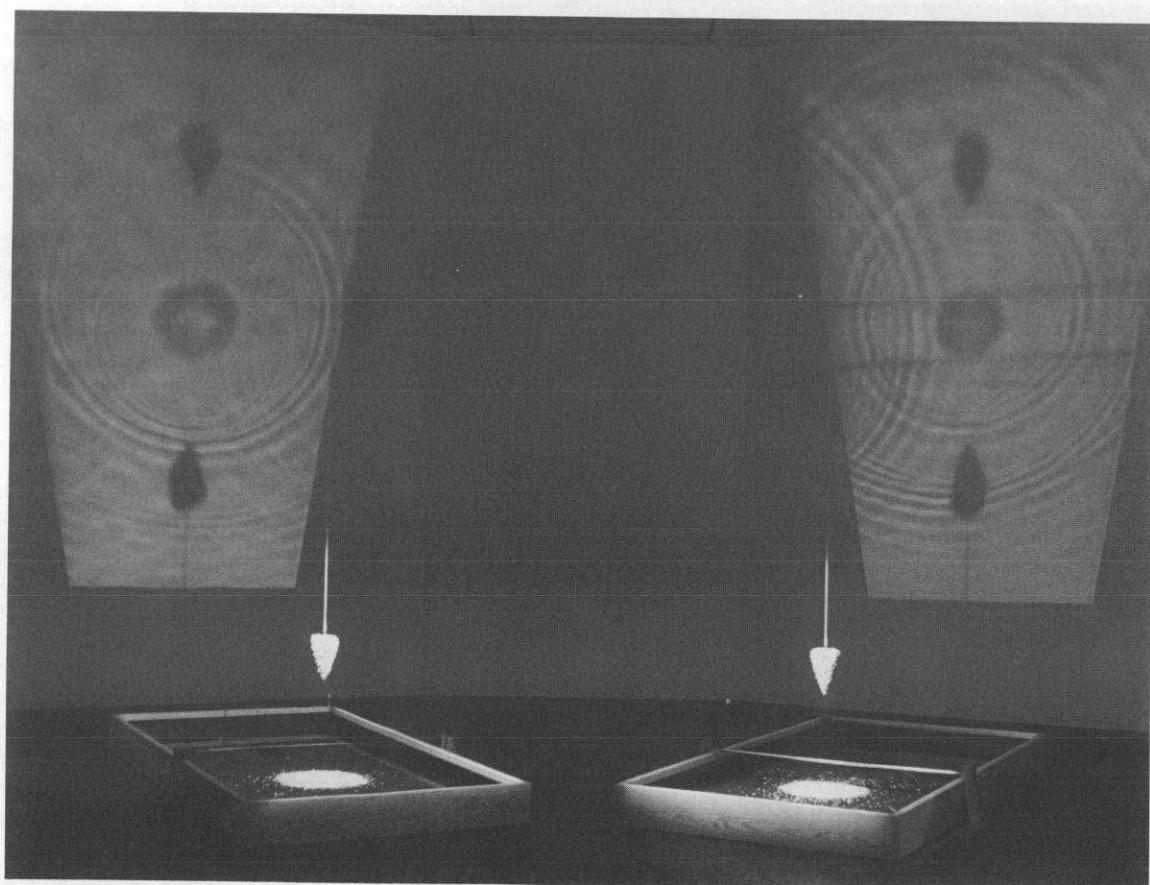
life of its own.

Visitors, willing to give only a few seconds' glance to a static painting or sculpture, were willing to spend long periods of time contemplating Remembering Plato. Many viewers revisited the sculpture several times. Mothers noted the tranquilizing effect it had even upon their otherwise active babies. No knowledge of movements in contemporary art was needed to appreciate it. Its appeal was universal.

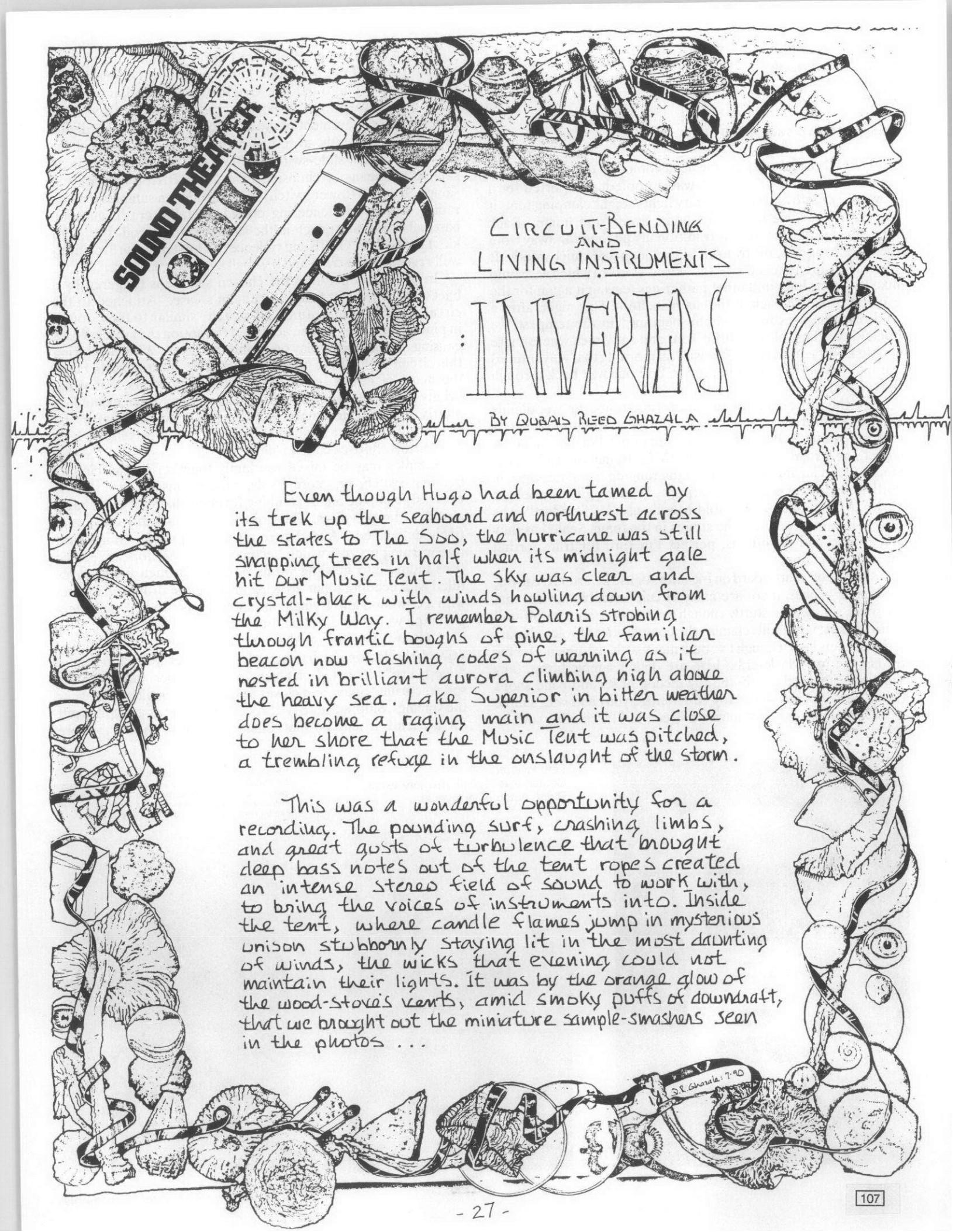
Tapping the creative potential of natural processes, Mineko Grimmer celebrates the spiritual and physical energies which are transmitted through natural materials. Revealing the environmental agents of change, her work increases the sensory awareness of her audience.

Much has been assumed about external and cultural influences for Mineko Grimmer's work. Although these are undeniable factors in any artist's works, Environment and Process emerged from a sincere desire to present the artist's work from her point of view. The name of the exhibition and catalog was derived from the content of Mineko Grimmer's art, which depicts change in the context of various environments.

I am grateful to Willie Ray Parish, sculptor and Art Department Chair, who invited Mineko Grimmer to use the Main Gallery in the Fox Fine Arts Center for a solo exhibition. Finally, I am indebted to Mineko and John Grimmer whose efforts made Environment and Process a success.



Right — Photo #10:
REMEMBERING PLATO.
1992 High Museum of Art,
Atlanta, Georgia.



SOUND THERAPY

CIRCUIT-BENDING
AND
LIVING INSTRUMENTS

: INVERTERS

By DUBAI'S REED GHAZALA

Even though Hugo had been tamed by its trek up the seaboard and northwest across the states to The Soo, the hurricane was still snapping trees in half when its midnight gale hit our Music Tent. The sky was clear and crystal-black with winds howling down from the Milky Way. I remember Polaris strobing through frantic boughs of pine, the familiar beacon now flashing codes of warning as it nested in brilliant aurora climbing high above the heavy sea. Lake Superior in bitter weather does become a raging main and it was close to her shore that the Music Tent was pitched, a trembling refuge in the onslaught of the storm.

This was a wonderful opportunity for a recording. The pounding surf, crashing limbs, and great gusts of turbulence that brought deep bass notes out of the tent ropes created an intense stereo field of sound to work with, to bring the voices of instruments into. Inside the tent, where candle flames jump in mysterious unison stubbornly staying lit in the most daunting of winds, the wicks that evening could not maintain their lights. It was by the orange glow of the wood-stove's vents, amid smoky puffs of downdraft, that we brought out the miniature sample-smashers seen in the photos ...

Circuit Bending and Living Instruments by Q.R. Ghazala

INVERTERS

(continued from previous page)

These days, having become accustomed to the advantages a canvas army tent (well vented, waterproofed, and ported for a stovepipe) has over the customary light-weight camping tent, it has clearly become my mobile home away from home. Back then, however, this tent was traditionally pitched far away from the main campsite, off by itself in the deep and quiet woods. It was, as I've already called it, "the Music Tent" to which we would hike for recordings and other gatherings leaving it again for the evening cook fire back at the main shelters. This night, after a wild recording session of circuit-bending* in the tempest, we opened the flaps of the Music Tent and saw trees where there should have been no trees. It wasn't till morning that we ventured out into the eerie new landscape to find our way back through the tangled forest.

No, this article is not about storms, tents, or woodlands (though I will return there in a moment); it is about instruments that are quite at home in these situations. I'm reminded of something I read not long ago in EMI... Being an avid beach-comber, and having found everything ranging from messages in bottles to a live air-to-surface torpedo, I can imagine the delight of discovering one of Reinhold Marxhausen's "Stardust" orbs resting innocently among the stones in the foam. Sealed as they are, simple and melodious, perfect I'm sure for transporting through the elements.

While I don't surf-board on Incantors or use Inverters (read on) as skipping-stones, there are many circuit-bendable devices that are small, simple, and sturdy enough to be appropriate for off-trail music making while still retaining the complexities of voice characteristic of bending. Though I've built many such instruments for my travels, the two I'll describe here are digital sample-boxes, they show up with regularity in the toy section of second-hand shops (again, don't let the word "toy" discourage you) and with simple modification will produce intricate streams of fascinating sound.

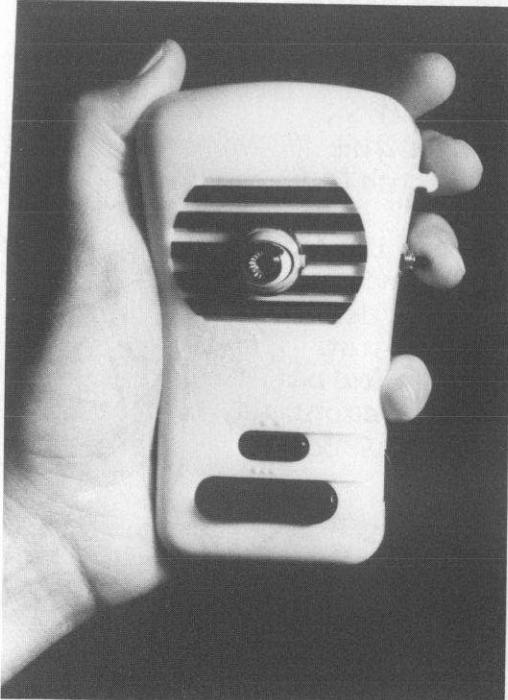
"Inverter" is the general term I apply to small, circuit-bent sample-boxes. First, let's look at the one shown being held in the hand (see photo below). Originally, this motion-sensitive noise-maker was meant to be strapped to the child's wrist in order that the movement of the arm could trigger the six digital samples permanently stored in memory. As you'll see in the photo, two black slide-switches allow the selection of a single sample by means of choosing bank A or B (top switch) and sample 1, 2, or 3 (lower switch). The half-dozen samples include racing motorcycle, cheering crowd, metallic crash, gunshot, baseball whack, and punch-in-the-stomach Hollywood-style. (For kids I guess it's SPORTS and violence?) The samples are relatively well-recorded, the crash and baseball sounding very nice.

In standard operation the chosen sample is triggered by a backwards rocking of the instrument's case. Attached to the circuit-board is a miniature "tilt-switch" similar to those found in pinball machines. When activated by motion the switch closes causing the sample to play once and then stop. While exploring this circuit with a wire "jumper" (creative short-circuits being the heart of circuit-bending), I found two points that when briefly connected would fracture the sample into an expanding matrix of unexpected tones. A close look under a finger in the photo will reveal a momentary-contact micro-switch which creates this short-circuit at will.

Samples may be mixed randomly together by the circuit-bending switch, or, more likely, processions of new sounds endlessly combine and recombine forming chains of very sharp, abstract, digital voices. The noises are remarkably clean and finely delineated. And they're always surprising. Gongs turn into warning buzzers which become car horns atop screeching tires fading into howling winds blowing through metal caves filled with echoing sonar growing into a snare drum roll ending with a cow moo and frying pan falling to the floor. Your interpretation would be different, but you get the idea.

Only two versions of this instrument now exist. The one we've been looking at has been looking back with an antique "sleepy eye". This old mechanical doll peeper, inset into the speaker grille, opens and closes as the device is tilted to trigger the voicings. Shipped across the ocean last year as a surprise gift for a friend, it may be that Customs officers were the more

Left: Inverter.
Center: Inverter with memory switch.
Right: Automotive Inverter.



*Circuit-Bending refers to the process of creative short-circuiting by which standard audio electronics are radically modified to produce unique experimental instruments. A further description of these techniques can be read in EMI Volume VIII #1, Sept. 1992.



startled. The other similar looking Inverter, pictured atop the marquetry, is different only in its finish (deep red lacquer and golden speaker grille), and in place of the miniature circuit-bending push-button is an internal mercury switch. Whereas the original sounds of this model are still activated by a backward tilting, the circuit-bent voicings are initiated by a second motion, swinging the case to the side thereby rocking the mercury onto the switch's contacts. As you can picture, movement and gesture play a vital role with both these Inverters.

The remaining device illustrated represents a much more extreme example of circuit-bending. Originally, this plastic case had a pistol-type handle attached to the underside from which ran a wire connected to a motorized car. The whole housing served as a remote-control unit... finger on a "go" lever, thumb above the four sample buttons. Along with automotive sounds, various human-voices are also incorporated. Much like the Inverters just discussed, circuit-bending explodes the samples into various new phrasings, this time mixed with isolated phonemes and make-believe words.

In addition to the two circuit-bending push-buttons seen on the sides of the case, you'll notice I've added an RCA-style output on the upper right-hand side of the housing, as well as a knob protruding from the instrument's top. The output is line-level for feeding signals to an amp or processor while the dial is a clock control for decreasing the operating rate (thereby voice pitch) of the circuit. As usual, the two mini-switches are connected to bending points found on the circuit-board as before, the output is connected to the speaker terminals (if such an output is too "hot" the right resistor will correctly lower its strength), and the speed control is a small potentiometer wired to circuit points that when touched with a finger are found to lower the pitch. As I've mentioned before, exploring electronics with your fingers serving as variable resistors must be restricted to low-voltage circuits only... 9V or less, and containing no larger capacitors or step-up transformers.

Surrounded by rustling corn fields and meadows of grazing cattle, in the very heart of Amish country, is a small town bearing the unusual name of Shipshewanna. A Native American term, the title translates "Vision of a Mountain Lion." It's here that there occurs a great weekly auction as eclectic in its offerings, perhaps, as any that this country might proffer. One day, amidst the old trade beads, splendid majolica, timeworn horse buggies, imposing Victorian miracle machines, unheard-of musical instruments and heaps of ornate antiquities, I was drawn to a dilapidated celluloid jewelry box covered with decaying golden velvet. Inside the box was grouped a wonderful assortment of glass animal eyes, all sizes, styles, and colors. One of these eyes, yellow to match the sample buttons below, is affixed to this more elaborate Inverter. It seems to me that eyes, samplers themselves, are fitting adornments for digital samplers. And while it isn't polite to stare, proper etiquette is not, as you know, of great concern to circuit-bending.

Besides the glass eye, this Inverter is finished with thin lavender and lime marbling over deep metallic green, all of which is sealed with an iridescent final coat. Bright red letters label the controls and will someday remind me that at one time I knew what they meant. (Actually, I do write complete manuals for the more complex instruments).

While clearly related to both the Mellotron and the maraca,

I hesitate to classify these instruments. Is the Inverter an electronic rattle? If it contained samples of song sparrows it might be a bird-call... But what if it contains men's voices? Is it a man-call? And then what does it become when the circuit-bending switches are pressed and its voices loose all connection with the familiar? There isn't room enough in this journal to begin to relate all the discussions and arguments that have occurred over the years relative to where circuit-bending, nonlinear and outrageous as the resultant instruments usually are, fits into the overall scheme of things. Such conjecture most often ends with someone pushing a tape deck's "record" button, dimming the

lights, and all parties involved grabbing the nearest experimental instrument. And that's exactly what happened in the Music Tent the evening Hugo shattered the forest.

As the wind played havoc outside the canvas, we, inside, played these peculiar instruments with the chaos of circuit-bending upon their voices as though the storm was manifest in these things too. We stayed till dawn's first glow, soft and cool, tentative behind low grey clouds, and then emerged to see what we had only heard and earlier glimpsed through the dark silhouettes of frenzied trees. The assault had turned the familiar woodland upside-down. Birches and maples were stripped

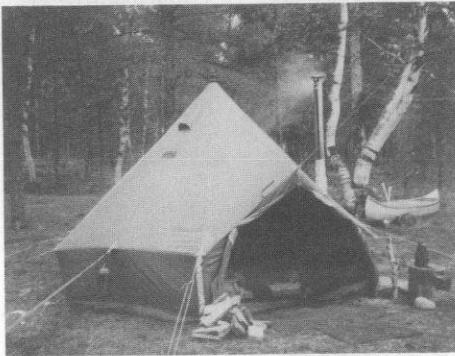
of their leaves, lost now to the forest floor, a strange pale green underfoot where brown pine needles had cushioned the hike only hours before. We walked under great triangles of fallen limbs and climbed through walls of tangled boughs crushed down by invisible giants that had tumbled across the delicate land.

At the main tent site, stakes had been pulled from the earth and raintarps were wrapped around the trunks of battered pines, the shelters themselves awkward heaps barely gripping the soil. Trembling peaks of foam, whipped-up from the shore, clustered amidst the reeds, breaking loose in strong gusts and rolling into the woods like surreal tumbleweed. My canoe had been blown across the strand and was lodged against an anchoring stump, the one I had turned into a sundial using a spare handful of nails. For several days a splintered hickory blocked our exit to town, but we had provisions, and the weather quickly cleared to blue cumulus skies and green Northern Lights above the sailing embers of our fire.

We were, of course, aware of the peril during that windstorm though forecast had called for nothing so severe. Looking back, while I enjoy tumultuous weather by itself, and though I've played and recorded in many outlandish situations, composing with circuit-bending amidst that cyclone was about as intense a meteorologic experience as I can remember. Somehow, the voices of these bizarre instruments made the harsh setting seem oddly inviting, less dangerous, even appropriate. And while I'd prefer such typhoons spend their lives at sea, I guess you know I'd stand in line to partake of the whole thing again in a moment.

The author will accept assignments to construct any of his devices covered in EMI, circuit-bent or original, although availability of specific electronics for bending is often uncertain. Contact Q.R. Ghazala at Sound Theater, ECHO 241,7672 Montgomery Rd., Cincinnati, Ohio 45236.

Computer assistance by Tony Graff, painter and fine artist.



The Music Tent

NOVELTY INSTRUMENTS FROM THE EARLY DAYS AT MUSSEHL & WESTPHAL

By Bart Hopkin

In EMI's January 1992 issue we reprinted three photographs that had appeared in the musical saw book, *Scratch My Back*, by Janet Graebner and Jim Leonard.* The photos were reproductions of advertising brochures put out in the 1920s by the musical saw manufacturing company Mussehl & Westphal to promote three of their non-saw instruments: *Mussehl's Slide-Trumpet-Sax*, the *Russian Marr-Hoo-Baw*, and the *Jazz-o-nette*. I had been unable to track down the original flyers or to find further information on the instruments, but EMI did obtain permission from Mary Kay Dawson of Mussehl & Westphal, along with the book's co-author Janet Graebner, to reprint the photos. And so we ran them just as they were — as intriguing tidbits with very little background information.

But a short time later EMI's interest in the photos came to the attention of the sawing book's co-author, Jim Leonard. Jim was able to come up with a generous body of information and documentation on this forgotten chapter in the history of offbeat instruments, which he has kindly shared with EMI. That, along with some material gleaned from other leads, allows us to present the fuller picture now.

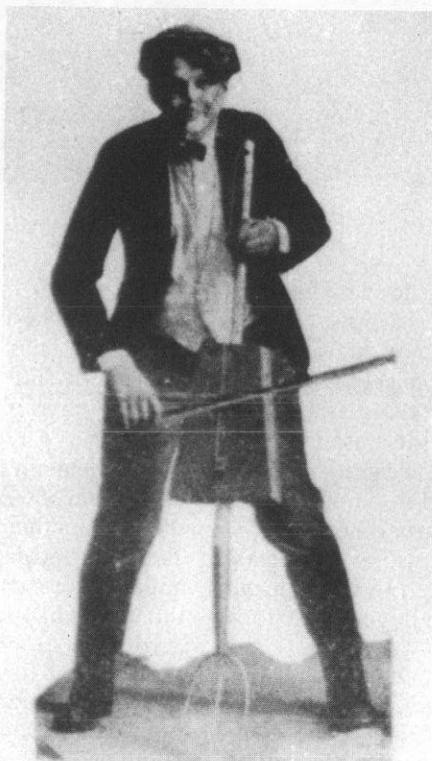
To begin at the beginning: In 1919, a young man named Clarence Mussehl became intrigued with the musical saw after seeing one played in a vaudeville show. He soon set to work to make a saw designed specifically for music, experimenting with different steels and different measurements, eventually settling on the softer steels and the longer, narrower proportions that were to become standard in made-for-music saws. In 1921 he founded the company of Mussehl & Westphal to market his saws. (The Westphal in the name probably refers to a Marion Westphal, with whom Mussehl performed saw duets in the 1920s.) The company grew rapidly. By the mid 1920s, during its heyday, Mussehl & Westphal sold 25,000 to 30,000 saws a year. They made alto, tenor, baritone and bass saws, as well as special decorative models. With the depression sales dropped off rather drastically; and later, during the Second World War, production was further curtailed as steel became unavailable. The company eventually went into dormancy; Clarence Mussehl turned to selling paint for a living. He re-started the company in the 1950s, but things were not the same. By the 1970s Mussehl & Westphal was selling only about 100 saws a year. In 1978 Dan Wallace, an airline pilot, musical sawyer, and friend of Clarence Mussehl, bought the company. Mussehl died just a month later, at age 84. Wallace brought the business back up to 1000 - 1500 saws sold per year, prior to his death in a plane crash in 1982. Since that time the company has continued under the direction of Dan Wallace's wife (now

remarried), Mary Kay Dawson, along with their son Jim Wallace. The saws currently are actually manufactured by a firm in Ohio, using English steel. Only the tenor model is still in production.

What's missing from the above history is the fact that Mussehl & Westphal didn't make only saws. In the high-flying days of the 1920s, they produced a whole line of offbeat instruments, including both winds and strings. To understand the context in which these instruments were created, it's important to be familiar with the special application of a key word: *novelty*. The usage seems rather dated now, but in the '20s and '30s on through the '50s and '60s there was a distinct entertainment phenomenon known as "novelty acts." It's a little hard to come up with a clear definition of just what a novelty act was — most people reading this will probably recall the style for themselves anyway — but a common element was the use of unconventional stage props, in a context that was generally topical, humorous, fun, and never high-brow. The style reached its zenith in the inspired antics of Spike Jones and his City Slickers. While the City Slickers attained universal recognition with the advent of TV, there were countless small-time groups scattered across the U.S. throughout the decades preceding. There was also room, under the "novelty" heading, for acts having a novelty hook without the element of slapstick, as recreated in the wonderfully sincere musical glasses player in Woody Allen's *Broadway Danny Rose*.

Offbeat musical instruments found a natural home in the novelty world. They were a core element in many novelty acts. And in fact, "novelty instruments" came to be, in some parlance, a recognized organological category unto itself. Thus, the instruments in the Mussehl & Westphal catalog we'll be looking at here are repeatedly identified as novelty instruments, with no further explanation needed. So are the unconventional instruments included in similar catalogs put out around the same time by the J.C. Deagan Company.

It was natural for the Mussehl & Westphal Company to see an opportunity in novelty instruments, because the musical saw was a favored instrument for so many novelty acts. But it doesn't appear that the other Mussehl & Westphal novelty instruments ever achieved widespread use. In fact, scarcely anyone sees even to remember that Mussehl & Westphal ever made, advertised



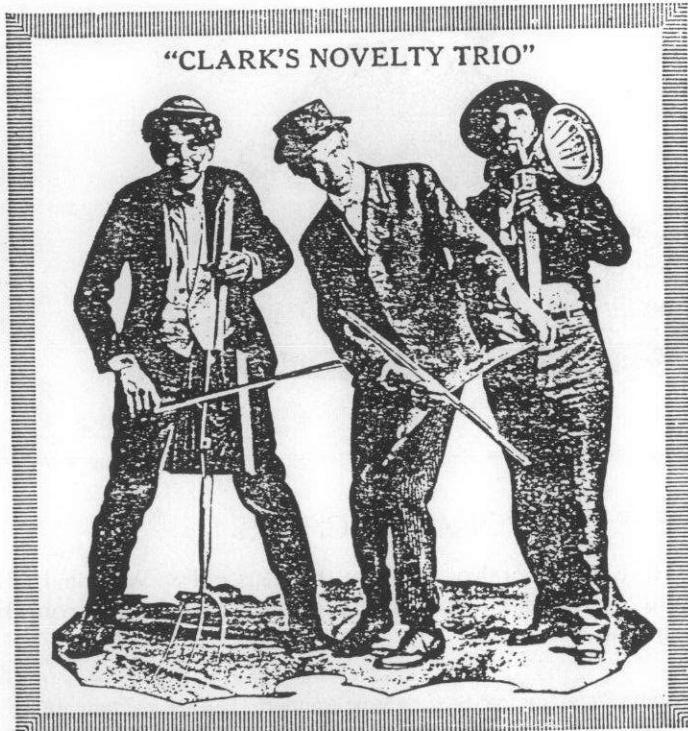
*Janet E. Graebner & Jim Leonard, *Scratch My Back*, Kaleidoscope Press, 28400 Pinto Dr., Conifer, CO 80433-5309, 1989. Also available from Jim Leonard at PO Box 2183, Santa Ana CA 92707.

and sold instruments other than saws. The information might have died with Clarence Mussehl, were it not for this narrow thread of circumstance: In the 1930s there was a novelty band known as *The Missourians* working the Midwest, led by a man named Clyde Dawson (no relation to Mary Kay Dawson currently of Mussehl & Westphal). It's not clear that *The Missourians* used any of the Mussehl & Westphal novelty instruments aside from the musical saw, but Clyde Dawson did correspond with Clarence Mussehl. In the process he acquired a Mussehl and Westphal catalog and several advertising brochures. These he kept until he died in 1984. Shortly before his death he was visited by Jim Leonard, who was in the process of researching the musical saw book *Scratch My Back*. Jim photographed several of the brochures, and photocopied the catalog. After Clyde Dawson's death, the original materials apparently were thrown out; in any case, they're now nowhere to be found. But we are left with the photos and photocopies that Jim Leonard made. These are the materials reproduced on these pages.

THE CATALOG

The surviving Mussehl & Westphal catalog dates from sometime around 1923 or 1924. (No publication date is given, but several letters to the company, reprinted in the catalog, bear dates from the middle months of 1923). It is sixteen pages long, and contains descriptions, pictures and prices for eight different instruments. It also contains a lot of testimonials from satisfied customers — that's what the aforementioned letters are about — and inspiring statements of the company's business philosophy. Three instruments from other manufacturers, not shown on these pages, are included in the Mussehl & Westphal catalog as well. The Organette and the Hohner-Sax are harmonica-like free-reed instruments with body forms and keying mechanisms made to resemble clarinet (sort of) and saxophone. The third instrument is a standard tenor banjo.

Below: The front cover of the catalog (reproduced from the photocopy), showing members of "Clark's Novelty Trio" playing pitch fork, saw, and jazz-o-nette (no more information about "Clark's Novelty Trio" is given).



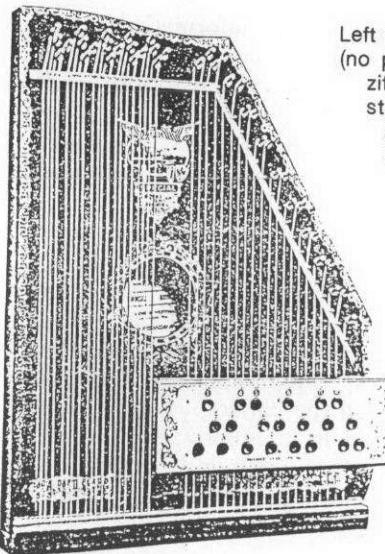
Left and below: THE MUSICAL PITCHFORK, price \$13. A one string instrument played with either pick or bow, using a metal slide bar to stop the string. Basically this instrument was a normal pitchfork with a string and sound box attached.



Right and below: THE JAZZ-O-NETTE, price \$11. A slide whistle with a 10" conical bell apparently positioned so as to project the sound coming off the fipple edge.



Below: The Glassophone, price \$18. A set of 23 musical glasses, with an intended range of just under two chromatic octaves. A mark on each glass indicates the level to which it is to be filled with water for tuning.



Left and below: The Mando-Zither-Harp (no price given). A forty-one string lap zither. There are twenty-one melody strings, plus five separate chordal groups of four strings each. The 4-string groups are designed for easy strumming of simple chordal accompaniments. The button keyboard over the melody strings, according to the accompanying blurb, can imitate the sound of either mandolin or zither, but it's not clear from either the description or the pictures how the pluck or hammer mechanism works.



THE PROMOTIONAL BROCHURES

Here are several pages from the Mussehl & Westphal advertising flyers found in Clyde Dawson's collection, reproduced from Jim Leonard's photographs.

Mussehl's Slide-Trumpet-Sax, the Most Wonderful Musical Instrument Ever Invented, price \$9.75. "Yes — here it is at last! The instrument you have long been waiting for!" proclaims the brochure. Based on the somewhat incomplete description given here, The Slide-Trumpet-Sax was not actually a reed or lip-buzzed instrument, but a voice modifier: "Just place the mouthpiece of the instrument in your mouth and hum a tune. That's all there is to it." Apparently the special sound of the instrument was mostly a matter of the effects on the voice of the resonances in the three tubes, which could be altered in various ways for "ludicrous effects.". The center

tube was slide-able, which added greatly to the visual impact of performance on the instrument and probably contributed to the range of resonance-altering voice modification effects. Whether the Slide-Trumpet-Sax was also a kazoo (i.e., whether it incorporated a buzzing mirliton membrane) is not clear. Aside from its musical attributes, the instrument apparently had remarkable powers in the social arena, as the ad copy points out, "Popularity will come to you at once when you own a Mussehl's Slide-Trumpet-Sax." Furthermore, "You can join an orchestra — or get up one of your own — and make loads of money."

Most Wonderful Musical Instrument Ever Invented

Mussehl's
Slide-
Trumpet-Sax

Be Popular—Have Fun!

Wonderful Tone Tricks With This Amazing Instrument

Sensational Introductory Low Price!

Get Yours—Now!

No Lessons—No Practice

The Biggest Hit Everywhere

How Music Thrills Us All!

Order Your Slide-Trumpet-Sax Today

Right: THE RUSSIAN MARR-HOO-BAW, price \$9.75. The Marr-Hoo-Baw was essentially a three-stringed version of the Pitch Fork described earlier, minus the pitch fork. "A Russian peasant, Marr-Hoobawski," we are told, "is the inventor of this instrument. Many of the world's best musical instruments were originated in Russia. The Marr-Hoo-Baw does justice to the Russian genius." The instrument was sold with a demonstration phonograph record and an instruction book, which used a special numbered note-reading system.

requests from the few television stations requesting names of novelty bands. Hundreds of television stations will be built in the future. Now — right now — there is a wide open field for novelty trios, quartets, and large novelty bands. The door is wide open. The demand for this type of entertainment is larger than we can anticipate. Those who have the foresight to enter this profession 'on the ground floor' will make the headlines — as did those who could foresee the possibilities in radio twenty years ago."

For generous assistance with this article, special thanks to: Jim Leonard, Louise Dawson, Mary Kay Dawson, and Janet Graebner.

Left: Sweet, Sweet Music That You Can Play: This brochure, featuring a picture of The Maestro's Harmonizers on the front, apparently appeared somewhat later than the others shown in these pages — late thirties, perhaps? It promotes novelty instruments as easy, rewarding, inexpensive and fun to play, at the same time taking pains to defend them as serious, real musical instruments. Encouraging people to buy the instruments, it goes on to suggest that novelty bands are the wave of the future and bound to be great money makers, with this line of reasoning: "Television is in its infancy as radio was twenty years ago. Already we have received

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The New and Improved 1925 Model

JAZZ-O-NETTE

**The Easiest to Play
Wind Instrument
On the Market**

No Play, No Pay

If you can't play this instrument within three days return it to us and we refund your money

SEND NO MONEY

Former Price \$11.00 Now only \$6.50

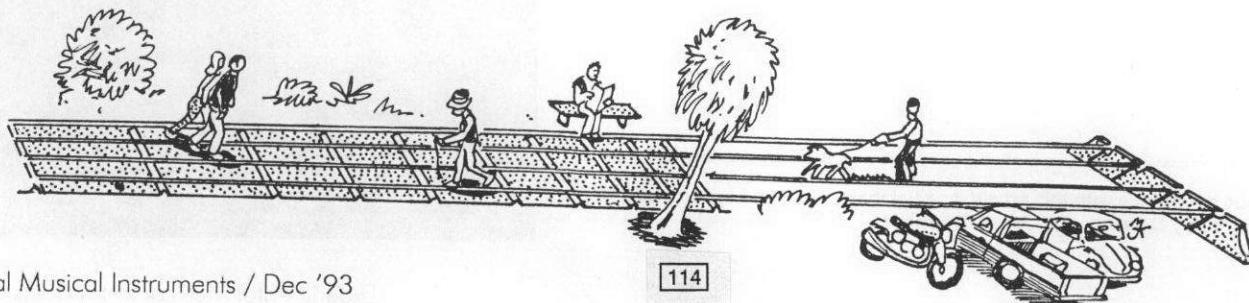
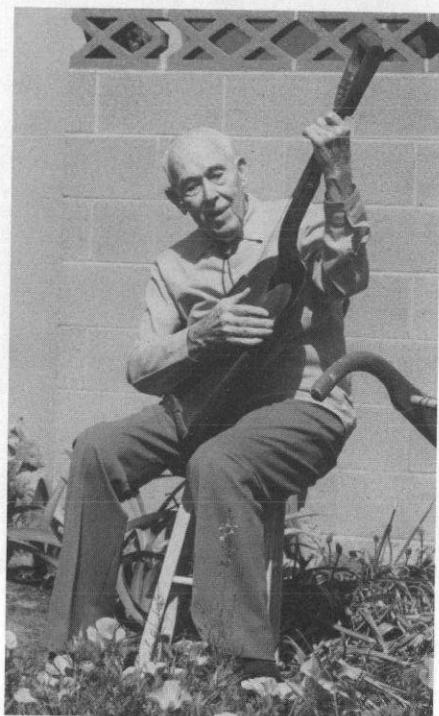
This big reduction in price made possible only by the ever increasing demand which reduces the cost of manufacturing.

In the lower right corner, there is a small box containing the following text:

The "Jazz-O-Nette" model after 1925 was produced in a larger size instrument. It was produced from brass and had a polished brass finish. It was a very popular instrument at the time.

CLYDE DAWSON AND THE MISSOURIANS

Clyde Dawson, whose collection of Mussehl & Westphal brochures & catalogues form the centerpiece of this article, died in 1984 at age 90-plus. His group *The Missourians* played professionally in the mid-western states for many years around the 1930s. In addition to a Mussehl & Westphal musical saw, the Missourians played an orchestra-ful of bowed and plucked strings made from shovels and other house-and-yard materials, made by Clyde Mussehl himself. The photos below show the Missourians in their prime (right); an assemblage of plucked string instruments made by Clyde Dawson (below left); and the man himself (below right), in the early 1980s, playing one of his instruments.



RECORDINGS REVIEWS

By Sasha Bogdanowitsch, Tom Nunn & René van Peer

JAAP BLONK: FLUX DE BOUCHE and LIEDEREN UIT DE HEMEL

On CD (the latter in a box with book and 3-D viewer) from Staaltape, PO Box 83296, Portland, OR 97283

I have always abhorred the academic bigotry maintaining that the human voice was the most beautiful instrument, invariably referring to the demented yelps and ululations of inflated sopranos and pot-bellied heroic tenors high culture indeed. When I think of the voice as an instrument, I expect it to be more like a tool of boundless versatility. A sound source that can rasp and click and move along harmonics. And that is exactly how the Dutch sound poet Jaap Blonk uses it. His pieces are more than just reciting, acting, singing or speaking Blonk has found an area in between these, exploring it and expanding it. He performs his vocal acrobatics high on a tight rope that attaches sense to nonsense.

On these CDs there are tracks in which he travels around the domain of basic sounds (such as the 'r' and voiceless fricatives), leaving the listener behind in amazement at its vastness. Another poem consists of the phonetic representations of bird song. There are invented languages, pieces by Dada artists Hugo Ball (deeply lyrical) and Tristan Tzara (barbaric and ironic). Blonk maltreats the announcement from the representatives of Kurt Schwitters' legacy that he is not allowed to sell any more copies of his LP recording of the Ur-Sonate. Two tracks are repetitions of the line, "The minister regrets any such statements." In the first he leaves out an increasing number of vowels, the second time the consonants, ending up with a frantic growl and a frustrated howl respectively.

Flux de Bouche covers the expanse of Blonk's repertoire: a cross-section through the history of the genre, comprising pieces from Dada artists, from Dick Higgins and Robert Wilson, and pieces that Blonk himself developed. Liederent uit de Hemel (Songs from Heaven) is a package in which the vocal expeditions find an effective match in the visual translations of designer Jan-Maarten Buissant.

Blonk's work is witty, it is charged with tension. And it's international to boot, as it short-circuits any language barrier. There may be a certain looseness about the pieces themselves, but his approach is one of dedication and precision. Exactly because he leaves overt meaning and melody behind, he turns his voice into an instrument. Indeed. An inspiring experience.

—RvP

FIBRE: I CRIED AT THE FAIR

On CD from 149 Huntington St., Brooklyn, NY 11231

The group FIBRE has produced an astonishing CD entitled *I Cried at the Fair*. This magnificently recorded work has a range of styles, musical characterizations and instrumentation that boggles the you know what! This is surrealistic music that flows with beautiful coherence and continuity despite (or perhaps because of) the immense musical territory covered. Instrumentation is always changing and defining the mood and character of the music as it flows through its series of mutations.

Thoroughly professional chops on percussion, synthesizer/sampler, electronics, tape manipulation, voice and God knows what else make the spaces and transitions equally and completely convincing.

There was not a moment that I wasn't fascinated as I listened to FIBRE. They've been likened to the Residents, and I can certainly hear this at times; but breadth of styles and instrumentation is much greater. This, of course can be good or bad, depending on one's perspective. Perhaps FIBRE is too far-ranging for popular music minds. However, I'm partial to groups/composers who seem to be constantly reaching out, extending boundaries, and balancing on edges with great skill and imagination. FIBRE is such a group.

And who is FIBRE? I don't know. It is a quartet of people (gender ratio unknown) who perform in white masks and black tights. This invites comparison to the anonymous Residents, too. Adds mystery..., mystique..., helps move us into the proper surrealistic frame of mind.

Experimental musical instruments are vehicles to other musical realities, and FIBRE'S music shares this fascination with the unexpected. The instruments used are capable (in such capable hands) of conjuring almost any acoustic image, and the music flows naturally through the possibilities. Those whose ears discriminately seek the edge of musical sound will dearly love *I Cried at the Fair*.

—TN

LIFE GARDEN:**PRY OPEN MY MOUTH WITH THE RED KNIFE OF HEAVEN**

On CD from We Never Sleep, P.O. Box 92, Denver, CO, 80201. Contact: David Olfant, 718 E Coronado Rd., Phoenix AZ 50006; (602) 256-9604

Pry Open My Mouth with the Red Knife of Heaven is the latest CD release by Arizona artists, Life Garden, who are comprised of five composer/performers: Peter Ragon, Bill Yanok, Su Ling Heydrich Olyphant and David Olyphant. The album title is inspired from a modern interpretation of the Egyptian Book of the Dead, quite effectively describing the nature of the pseudo-mysticality that seems to be referenced to a lot in their pieces. It is not easy to describe their work however, which crosses the boundaries between multi-cultural/ethnic sounds, experimental drone music, industrial, ambient soundscapes and group improvisations.

Though this album is all acoustic, Life Garden is adept at producing sound textures that one would think only samplers and electronics could produce. Their multi-layered sound tapestries succeed, from the listener's point of view, in that their sums are far greater than their parts. For instance, if Life Garden's music were just soloistic approaches on their various instruments, they would probably not hold water compositionally. But their minimal and simplistic approach to playing their instruments combined with the overlapping textures and timbres they create, and the extensive use of digital delays and loops, triumphs in producing an otherworldly, dark, brooding orchestra that waxes and wanes, thumps and bumps in some deep corner of the night.

The instrumentation includes many obscure ethnic and homemade instruments, including the Chinese ti-tzu, sona, and erhu, the Indian sarangi and shenai, Indonesian anklung, bamboo sax, prepared piano, pvc pipes, zithers, horns, hand drums,

voices, metal percussion, and two string instruments that I've never heard of: the gizma and zummara. But you won't be able to really pick out the instruments, for they are blended and lost in this sea-like wall of sound that is constantly ebbing and flowing from piece to piece, never letting up for a breath.

The pieces vary subtly in three distinct ways; they are: the dark, ambient drones and loop pieces of Zhen, Don, and "Chub"; the heavy, deep percussion works in "Lay", "Dang", and "Kye", and the multi-layered walls of sound, sometimes aggressive and sometimes passive, in the compositions of "Drub", "Du", "Daggi", "Dag", "Sem" and "Do". If you are keen on music that explores the darker side of life with instrumentation that is "ethnic" and "not ethnic" at the same time, and whose synthesis can probably best be described by sounding like "Einsturzende Neubauten submerged in water," then Life Garden's *Pry Open My Mouth with the Red Knife of Heaven* is for you.

—SB

MICKEY THE CLOWN AND THE BAMBOO KAZOO: *CIRCUS FANTASY*

On cassette from Real Folks Records, Michael McCarthy, and Walt Matheny, P.O. Box 91, Covelo, CA, 95428, or Tai Hei Shakuhachi, PO Box 294, Willits, CA 95490.

This Californian clown, Mickey, brings the little ones a whole set of new and enjoyable original tunes, cranked out in a rather raw, but joyous sound, most to the accompaniment of the cute instrument made by Mickey, the bamboo kazoo. The instrument is simply a 3 to 4 inch hollowed out piece of bamboo with a hole drilled on the side for blowing. Inserted into this piece is another hollowed out piece of shorter bamboo with a slightly smaller diameter, that holds a small piece of rice paper. This serves the same function as the vibrating membrane of the traditional kazoo and even, I think, sounds better. It is natural and rustic in appearance and very simple to play.

From the first piece, "Mickey's Theme," to the five others, the standard bassline with organ and synths produce a nice poppy backdrop for Mickey's excited vocals and bamboo kazoo playing. Especially charming songs include the "Barnyard Zoo," a contemporary version of "Ol' McDonald," "Skateboard Surfing," a delightfully bizarre Beach Boys influenced song, and "Finish the Food on Your Plate," a subtle and not so subtle tune to get your children to finish those greens.

I particularly enjoyed the global warning concern in "Plant a Tree". Some of the lyrics are: When you are hanging around, You don't know what to do, Get out of that chair, don't despair, I have an idea for you! Plant a tree, for you and me! Say hello and watch it grow!

Though Mickey's dry vocals, rawness and the corniness factor may sometimes get a little grating, overall this is a great release for kids with memorable, tuneful songs, and a lot of bamboo kazoo playing. Incidentally the instrument is available from Mickey at the address above.

—SB

DAVID POYOUROW (& SITTING AMOK): *THE MUSIC OF DAVID POYOUROW (77-90)* and *ESCALATOR MUSIC & FREE FALL*

On cassette from David Poyourow, 575 Pierpont Dr., Costa Mesa, CA 92626

For months I've been brooding over three cassettes with David Poyourow's music, trying to distill the essence out of it in such a way that the words do justice to its diversity whilst effectively covering the gist, and still make clear what it is about. From 1975 he has designed and built instruments. He plays them

in duo formations (e.g. with Chris Brown and Tom Nunn) and larger groups, sometimes together with conventional instruments. Often he processes the sounds. He is interested in the manipulation of timbre rather than melody. He regards development within separate pieces as an improvised flowing from one state into another, keeping on the edge. A permanent state of unbalance.

There is a marked difference between the tapes. The first has a vaguely jazzy flavor. Sounds like bands have recorded it, an impression you won't easily get from the other cassettes mainly because of an ever stronger role of Poyourow's electronic processing. *Escalator Music* could be meant to be played in that environment, but then it's surely meant as a joke as well; it may be meant as (or, as if) played by the device, and that makes sense, too. The sound material is heavily processed, launched into a universe of noise. So you'll encounter warps and gravitational dips and bumps, static that's getting bent and twisted, lifted up, stretched wide, and dumped.

On *Free Fall '91* Poyourow is joined by four other musicians. Here the acoustic sources of the component sounds surface more often. The music seems to shift its balance from foot to foot: to and fro between acoustic and electronic. The overall impression is of different radio stations floating around one wavelength, as if attracted to it like moths to a light in the dark. Or is it the surf lapping on a sandy beach and am I imagining the rest? You're never quite sure what you're actually listening to, but then there's so much unpredictability that you'll tend to forget about trying to guess.

—RvP

BRADFORD REED: *ULTRA FRESH SUPER VIBE*

ON cassette from ft. lb. Records, 230 3rd St. Brooklyn, NY 11215

This is a solo tape using Bradford Reed's original instruments exclusively and performed by Reed. This is a demanding task because of the limitations of solo playing and exclusive reliance on one's own instruments, primarily a single instrument at that. Reed's instruments on this tape include the Pencilina (the primary instrument on the tape), the Sound Loom, and the Insect Clavier.

The Pencilina is featured throughout and played exclusively in the last cut on side A (Reed's own rendition of Orff's *Carmina Burana* with a hazy, suggestively tentative falsetto male voice), and all of side B, a single composition in three parts.

The instruments are quite interesting. The Insect Clavier seems related to Q.R. Ghazala's circuit-bent instruments, but it is not used much here. Reed describes it as "a penal colony for electricity..., a box of electronics which generates tones and adjusts analog synthesizer... controlled by light-sensitive mallets." Instead, the stringed instrument sound dominates. For me, it was hard to distinguish the Pencilina from the Sound Loom, except the former seems to be the one with the most access to control in performance. The Sound Loom is a "machine with six hardwood keys struck by thick sticks ... arranged on a drive shaft turned by a pedal-controlled motor."

The Pencilina is a curious instrument with a strong low register and high register, but little in the middle. For this reason, I think it makes a great ensemble instrument. Played solo, one might miss that middle register, though I found the more rhythmic parts delightful on this instrument. It has "four bells, six transducers and ten strings. Its pitches are controlled by moving two sticks between the strings. It is struck, bowed and plucked."

Again, I can imagine Reed's instruments as part of a larger

ensemble, perhaps of other experimental instruments, but this tape is a nice exposé of Reed's experimental instruments.

—TN

VARIOUS ARTISTS: AS YET UNTITLED

On CD from Realization Recordings, 9452 Telephone Road #116, Ventura, CA 93004

On this CD compiled and edited by Jon Booth, we hear a number of experimental electronic music pieces, several of them predominantly of a single sound character with unchanging timbral palette. Here, as is often found in compilations, there is variety among the performances because different people or groups (and instrumentation) are involved (there are fifteen artists all told). Each piece is a "snapshot" of sonic experimentation. Although one does not hear much from experimental instruments *per se*, the spirit of experimentation with a strong urge to "go outside" and establish a different musical reality is apparent.

Beyond acknowledging the variety of music on this CD, it is difficult to comment on the work as a whole. To give the reader an idea of what to expect, however, I'll share some comments from my listening notes: "mechanistic, like a great boiler room of a ship;" "like an overpowering swarm of insects;" "rhythmic ground with wailing/screaming 'voices' over;" "sounds like propellers;" "non-mechanical/improv character, even a silence!" "mysterious, layered, a kind of industrial new age — nice stereo;" "cocktail club electronic music, some strange ballad;" "March! 1-2-1-2...;" "more engine room music, metallic, periodic, with hisses;" "traps enter and it becomes ElectroRock, then total change of character to mellow, soft, non-rhythmic..." "Baroque rhythmic organ drone in new age style with sudden changes of character... Did I hear the Monkey Chant? Did I hear Symphony of Psalms? oe Etc., etc., etc..."

I must say that some of these performances (all recorded September 9, 10, 11, 1991) go on a bit too long, and some were disturbingly mechanistic (as in whose playing here, man or machine?) But for the most part, this is a fine CD for those hungering for the more experimental, live electronic music of today.

Artists (groups and individuals) included on this CD: Architects Office, Randy Greif, PBK, Michael Chocholak, Hands To, Wisconsin Conservatory of Noise, Thomas DiMuzio, John Wiggins, AMK, Dimthingsshine, Illusion of Safety, Static Effect, Murray Reams, Arcane Device, The Haters.

—TN

VARIOUS ARTISTS: AUSTRAL VOICES

(On CD from New Albion Records 584 Castro St. #515 San Francisco, CA 94114 [Release #NA028-CD])

Stephen Scott (of bowed piano fame) formed this 1990 compilation of experimental Australian composers called "Austral Voices". It is quite worthy of mention, simply because of all the instrument builders/composers that appear on it from this land.

We are taken to the world of Perth-based composer Alan Lamb's wire music, in which he makes music from abandoned telephone wires. Using numerous devices, like ceramic piezoelectric elements on the wires, he is able to record haunting, ethereal, and downright frightening sounds that he later edits in the studio.

From Lamb we are taken to the hyper-speed piano music of Melbourne artist, Alistair Riddell [see also EMI Vol. VII #1], whose electric-mechanical attachments to pianos via his computers al-

lows him to far exceed human capabilities of performance on the piano.

This piece is contrasted drastically with American-born Melbourne artist, Warren Brt's tuning fork music [see also EMI Vol. II #5]. His composition features the set of just intonation aluminum tuning forks that were built in 1985 at Monash University. This soft, textural piece emphasizes strongly the pure timbral quality of the instrument with no vibrato or beating.

Another Melbourne artist, Ros Bandt, brings the listener a new instrument via the speed capabilities of a tape recorder, a psaltery (medieval plucked zither), and a five story parking garage. The result is a giant cavernous sound of tremendous resonance and sustain.

Other artists appearing on the recording are Sarah Hopkins and her whirly instruments and harmonic cello playing [see also EMI Vol. V #3], the prepared pianos of Ross Bolleter, and an electronic work by Jeff Pressing. This is a well-recorded, insightful look into the composer/instrument builders of the "land down under", quite worth the listen.

—SB

VARIOUS ARTISTS: THE MUSIC OF AFRICA SERIES (BY HUGH TRACEY) MUSICAL INSTRUMENTS:

STRINGS; FLUTES & HORNS; XYLOPHONES

On cassette from the Traditional Music Documentation Project, Kanawha Street, N.W., Washington, DC 20015 (Kaleidophon KMA 1, 4 and 5)

VARIOUS ARTISTS: THE ACE AND DEUCE OF PIPING (1906-1947)

On CD from Rounder Records, One Camp Street, Cambridge, MA 02140 (Heritage HT CD 21)

Usually records of ethnic music highlight a particular culture or a style, or even only one person. What is fascinating about these issues is that they focus on groups of instruments. The African series is a real treat. It has a mind-boggling centrifugal feel to it. With for instance the xylophone as focal point the listener gets catapulted along the traditions south of the Sahara, meeting a wealth of timbres and playing styles on the way. Side B features six pieces from the Chopi in Mozambique, stating that their tradition is "synonymous with the best in African music." They were composed by two master musicians, an indication of how sophisticated this style is. As is quite common in Africa, their timbila has gourd resonators fitted with membrane buzzers. This softens the timbre considerably, adding a hypnotic hum to the music. "Flutes and horns" stretches from ocarinas to kazoos, features horn ensembles and panpipes. A South African piece has a group playing whilst dancing, which sounds quite like an old bronchitic organ. "Strings" deals with plucked instruments, omitting the Malinese kora.

On the whole the commentary tends to be musicological, although at times the setting is briefly described. The instruments are introduced in concise notes. Oddly there is no reference as to when the original recordings were made. Mystery to fuel one's curiosity.

The bagpipe CD, The Ace and Deuce of Pipering, was compiled from old records and covers much of Europe, and includes a piece from both North Africa and India. It is rather short on information, does not say how the selection was made and what were the reasons for making it. Like the Music of Africa series it is not exhaustive. On the other hand it is a varied collection that includes rarities, such as the Northumbrian pipes, Czech and Polish pieces, and the Sardinian launeddas actually three cane pipes played simultaneously by one person using circular breathing. One pipe produces a drone, on the others the musician plays two-part polyphonic melodies. The incredible uillean pipes, played by the renowned Leo Rowsome at an early

age, embody the ultimate development with separate sets of pipes for chords, and bellows instead of a mouthpiece.

What is more, as nearly all this music dates from before the decline of European ethnic traditions (due to the rise of the international media culture, of corporate farming and the disintegration of traditional society), it breathes an intimate atmosphere. No trace of the posed self-consciousness of the theatrically arranged and choreographed renderings that became the standard after the Second World War.

Both compilations are great and useful sound guides into specific fields of music, concentrating on instruments that developed over long periods of time. They testify to man's creativity, putting to use any materials he could lay his hands on, transforming them into sophisticated tools for his benefit and pleasure. Both may inspire people to get to the basics of how these instruments are (or were) constructed and to use that knowledge in designing and building new ones. The cassettes refer to the International Library of African Music (Rhodes University, Grahamstown, South Africa), which could be a place to start one's investigations.

—RvP

Recordings for review may be sent to EMI at PO Box 784, Nicasio CA 94946, or directly to the reviewers: René van Peer, Bachlaan 786, 5011 BS, Tilburg, Holland; Tom Nunn, 3016 25th St., San Francisco, CA 94110, USA; or Sasha Bogdanowitsch, 460 Canal St. #9, San Rafael CA 94901.

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instrument making workshops for young people: "The Musical Potential of Found Objects in New Instruments Invented by Young People", by Hugh Davies, and "Mise en Sonore", by Liette Gauthier. Included are photographs of some wonderful instruments and performances from various workshops. Also in *Musicworks* 57 are retrospectives of several sound/music festivals, some of which (particularly Newfoundland Sound Symposium and Festival International de Musique Actuelle) prominently featured explorers in unconventional sound sources.

Woodwind Quarterly #3, Nov 1993 (1513 Old CC Rd., Colville WA 99114) contains articles on woodwind reeds from Australian cane, step-by-step flute tune-up, methods for making historically accurate pads for early flutes, a couple patents of relating to aspects of woodwind design, lots of woodwind making and repair tips, and much more.

Utandande 2, Oct 1993 (1711 East Spruce St., Seattle WA 98122-5728) contains listings of marimba and mbira players, teachers, makers, importers and sellers, as well as sources for marimba and mbira making supplies, and bibliographic and discographic materials.

Utandande 3, Dec 1993 contains articles on making hosho (Shona gourd rattle), plus invaluable notes from several makers on mbira and marimba making.

SOUND STORIES #1

A Video by Phil Dadson

This 60 minute video features 14 of the foremost American experimental musical instrument builders, many of whom are also composer/performers: Skip La Plante, Ivor Darreg, Lou Harrison & Bill Colvig, Susan Rawcliffe, Dean Drummond, Bart Hopkin, Tony Pizzo, Dan Senn, Joel Chadabe, Tom Nunn, Richard Waters, Darrell Devore and William Eaton.

Each artist relates a profound sound memory and demonstrates one or more instruments. A unique presentation of a unique subject.

Available by mail order from,
SOUND STORIES, P.O. Box 66060, Beachhaven,
Auckland, New Zealand.

Available on PAL & NTSC, VHS & SVHS
SVHS Video incl postage \$75.00 NZ
VHS Video incl postage \$60.00 NZ
Payable by bank cheque only.

NOTICES

ANYONE CAN WHISTLE, known for its mail order catalog of unusual and beautiful instruments and sound toys, has opened a store in Kingston, New York, open 11-7 daily. Call (914) 331-7728 for information or to request a catalog. [9-3]

BIOFEEDBACK SOFTWARE/HARDWARE: WaveAccess has released WaveRider, a MS Windows-based program with peripheral hardware that allows MIDI-compatable monitoring of biowaves. For information contact WaveAccess, PO Box 4667, Berkeley, CA 94704, (510)526-5881. [9-3]

Delta Spectrum Research has upgraded its HyperVibes software. Hypervibes is a collection of interactive HyperCard stacks containing research from both mainstream and non-mainstream physicists, with sections on music theory/physics among many other topics. Contact Delta Spectrum Research, 5608 S. 107th E. Ave, Tulsa OK 74146; (918)250-5666. [9-3]

Interactive sound sculpture by Seattle artist and composer Trimpin appears at the Tacoma Art Museum through Feb 27. 1123 Pacific Ave., Tacoma, WA 98402.

SOUND STORIES #1, a video by Phil Dadson. 60-minute video featuring 14 leading American experimental musical instrument builders — a unique presentation of a unique subject. Available from Sound Stories, PO Box 66060, Beachhaven, Auckland, New Zealand. VHS: \$60 NZ; SVHS: \$75 NZ, postage included, payable by bank cheque only. [9-1]

FREENOTES — Beautiful Music Made Simple. Freenotes are bar-percussion instruments that make playing music easy for anyone. Designed during a two-year residency with the Paul Winter Consort, Freenotes are useful ensemble additions as well as first instruments for beginners. Priced from \$165.00. For info call or write: Richard Cooke, P.O. Box 1492, Moab, UT 84532, (801)259-4411. [8-4]

A HOUSE OF INSTRUMENTS is a limited edition collection of 23 drawings by Robin Goodfellow, including many that have appeared in EMI over the years. 8 1/2" x 5 1/2" booklet now, available for \$5 (that includes postage & handling) from Mandala Fluteworks, 1655 Vista, Oakland, CA 94602. [9-2]

Newly released: **The Just Intonation Primer** by David B. Doty, a complete introductory text on the theory and practice of Just Intonation. Cost \$7.50 plus postage & handling, or free with new membership to the Just Intonation Network. For information: The Just Intonation Network, 535 Stevenson St., San Francisco, CA 94013, Phone: (415)864-8123 FAX: (415)864-8726. [9-1]

Sale! SCRATCH MY BACK: A PICTORIAL HISTORY OF THE MUSICAL SAW AND HOW TO PLAY IT, by Jim "Supersaw" Leonard. Prepaid U.S. \$15 per book, includes mailing (\$22.95) value. KALEIDOSCOPE PRESS, Janet E. Graebner, 28400 Pinto Drive, Conifer, CO. 80433-5309. [9-1]

PLUCK is a newsletter devoted to the Jew's harp. Subscriptions are \$10/year (3 issues) and help support the annual Sumpter Valley Jew's Harp Festival. Free sample available: POB 14466, Seattle, WA 98144. Please make checks payable to Gordon Frazier. [8-4]

A REMINDER -- Unclassified ads here in EMI's notices column are free to subscribers for up to 40 words; 40¢ per word thereafter. For others they are 40¢ per word, 15 word minimum, with a 20% discount on orders of four or more insertions of the same ad.

SUBSCRIPTIONS TO EMI: \$24/yr for U.S.; \$27/yr for Canada & Mexico; \$34/yr overseas. California residents add 7.25% sales tax for a total of \$25.74. Order from EMI, Box 784, Nicasio, CA 94946, USA.

EMI BACK ISSUES: Bound volume sets Vol I through Vol V: \$17 per volume. Single issues Vol VI #1 through Vol VII #6: still \$3.50 per issue. Single issues Vol VII #1 and later: \$6.00 per issue. These prices include postage for U.S., Canada & Mexico air, and overseas surface rate. In California add 7.25% sales tax. For overseas air add 20%. Order from EMI, PO Box 784, Nicasio, CA 94946, or write for complete listing of back issues and their contents. Corresponding cassette tapes also available for most volumes; see information below.

CASSETTE TAPES FROM EMI: \$8 per cassette for subscribers; \$10.50 for non-subscribers. Prices include postage for U.S., Canada, Mexico air, and overseas surface rate. In California add 7.25% sales tax. For overseas air add \$20%. Each tape contains music of instruments that appeared in the newsletter during the corresponding volume year, comprising a full measure of odd, provocative, funny and beautiful music. Volumes II, III, VI, VII and the recently-released VIII remain available; volumes I, IV and V are now sold out. Order from EMI, Box 784, Nicasio, CA 94946.

Recent Articles in Other Periodicals

The following is a listing of selected articles relating to musical instruments which have appeared recently in other publications.

"Folk Harp Design" by R. L. Robinson, in **Folk Harp Journal** #81, Fall 1993 (4718 Maychelle Dr., Anaheim, CA 92807-3040).

Notes from a lifetime working with folk harps. Reprinted from a 1980 lecture by the author, recently deceased.

"Subversion des Hörens: Der Berliner Komponist Rolf Julius" by Sabine Breitsameter, in **MusikTexte** #51 (Gladbacher Strasse 23, Postfach 10 24 61, D-50464 Köln, Germany).

A report (in German) on Rolf Julius, who often works with electro-acoustic sound objects of his own devising, frequently made with commonplace objects.

"Bow Rehairing, Step by Step" by Ralph Ursulich, in **Techni-Com** Vol. 18 #5, Sept-Oct 1993 (PO Box 51, Normal, IL 61761).

The article title says it all.

"Ellen Fullman" by Josef Woodard, in **Option** #53, Nov/Dec 1993 (1522-B Cloverfield Blvd., Santa Monica, CA 90404).

An update on Ellen Fullman's work with her Long String Instrument, with its 80-foot longitudinally-vibrating strings, and other recent projects.

"The 1992 Newfoundland Sound Symposium" by Gayle Young, in **Contact** 6.3, March 1993 (C.P. 845, Succorsale Place d'Armes, Montréal QC, Canada H2Y 3J2).

Notes from the Sound Symposium festival, which included many innovative sound explorers working with sound sculpture, electro-acoustics, and various sorts of performance.

"Edinburgh University Collection of Historic Musical Instruments: Workshop Drawings" in **FoMRHI Quarterly** #73, Oct 1993 (c/o J. Montagu, Faculty of Music, St. Aldate's, Oxford OX1 1DB, U.K.).

A listing of technical drawings of historic instruments available from The Curator, Edinburgh University Collection of Historic M.I., Reid Concert Hall, Cristo Square, Edinburgh EH8 9AG.

"An Introduction to the Chinese Dulcimer" by Kim Murley, in **Dulcimer Players News** Vol 19 #4, Oct-Dec 1993 (PO Box 2164, Winchester VA 22604).

A short description of the *yangqin* hammer dulcimer and its culture.

"The Archives of Traditional Music", in the "Winds of Yore" column by Penelope Mathiesen in **Continuo** Vol 17 #6, Dec 1993 (PO Box 327, Hammondsport NY 14840, USA).

A report on the materials held at the Indiana University's Archives of Traditional Music, which has an extensive collection of print, audio and audiovisual materials relating to musical instruments. In illustrating the contents of the archives, the author focuses in particular on several non-western woodwinds documented in materials there.

"Amplifying Everything Acoustic" (no author credited) in **Music Trades** Vol 141 #9, Oct 1993 (PO Box 432, Englewood NJ 07631).

The story of pickup manufacturer Larry Fishman's progress toward developing pickups for every imaginable acoustic string instrument.

"Harpsichord Dampers, Historic vs. Modern" by Paul Irvin, also in the Dec issue of **Continuo** (address above).

A discussion of certain features in harpsichord damper shape.

Also in **Music Trades** Oct issue (address above): articles on electric guitar manufacturing by Music Man, conventional acoustic guitar manufacturing at Guild, and all-graphite acoustic guitar manufacturing at Kuau.

And in **Music Trades** Vol 141 #10, Nov 1993 (address above): articles on drum and drumhead manufacturing at Remo, and computerized acoustic pianos at Pianodisk.

In **Xenharmonikon** 15, Autumn 1993 (Frog Peak Music, Box 5036, Hanover NH 03755): Articles by Walter O'Connell, Brink McGoogly, Brian McLaren, Douglas Leedy, John Chalmers and Bruce R. Gilson on various topics in intonational theory, with elements of whimsy and lyricism here and there informing the numbers and relationships.

"A trial of Fuhr's method of testing violins and violin plates" by Edward Wall, in **Journal of the Catgut Acoustical Society** Vol 2 #4 (Series II), Nov 1993 (112 Essex Ave., Montclair NJ 07042).

"If one end of a glass rod be held in contact with the front or back of a violin, while being stroked with moistened thumb and forefinger, the rod vibrates longitudinally with a frequency which is characteristic of the spot where the rod touches." The article discusses this technique as it relates to violin plate tuning and diagnostics. For EMI types, it might suggest a lot of further possibilities (already profitably exploited by the Baschet brothers).

Also in **CAS Journal** Nov 1993 (address above): articles on violin plate tuning, violin neck modes, effects of bass bar lengths, effects of string angles, and more.

In **The Gourd** Vol 23 #4, Fall 1993 (PO Box 274, Mt. Giliad, OH 43338-0274): a general description of gourd types and shapes, Hawaiian gourd craft including instrument making as taught by Calvin Hoe, a letter to the editor from gourd instrument maker T. N. Garland with a photo of gourd fiddles, and a funny story about how Alex Trebek, TV game show host and expert on everything, helped Gourd Society members determine that an unidentified gourd musical instrument was one of the family of Asian mouth organs including sheng, sho, et al.

Percussions #30, Sept-Oct 1993 (18, rue Theodore-Rousseau, F-77930 Chailly en Bierre, France) is full of valuable material for those who read French, including a bibliography of instrument making books, an article by Thomas Bloch on glass instruments, and notes water drums, Sumatran instruments, and a variety of other topics.

Percussions #31, Nov-Dec 1993 (address above) is equally full, with instructions for making *Le Ski de Son* (an amplified one-string instrument using a ski), Part 2 of Thomas Bloch's glass instruments article, a short article on sansa, a longer one, with beautiful photographs, on drums from the Pacific island of Ambrym, and more on various other percussion instruments.

Musicworks 57, Winter 1994 (179 Richmond St. West, Toronto, Ontario, Canada, M5V 1V3) contains two articles providing practical information based in the authors' experience in giving